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SCHIZOPHRENIC JAPANESE CANADIANS AND THEIR SOCIO-CULTURAL BACKGROUNDS

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Introduction

This article, which is based on examination of three second generation Japanese-Canadian schizophrenic patients, concerns itself with the relevance of sociocultural factors to the etiology, development and symptomatology of the disease.

The three case histories presented have in common that the parents of the patients had immigrated to Canada during the early part of this century, that the patients studied are in their early twenties, and that, as the parents of the patients are still alive and could be examined, the interrelationship between first generation Japanese Canadians (Issei) and second generation Japanese Canadians (Nisei), in its bearing on the development of the disease, could be studied.

With a view to studying these issues, the writer selected the case histories of the patients from the hospital records. He interviewed the patients as well as members of their families.

Following a presentation of the case histories, the history of Japanese immigration to Canada will be briefly reviewed and an attempt will be made to view the development of schizophrenia in the patients concerned against their socio-cultural background and experiences.

Case 1.

M. T., a 25-year-old, single woman, was referred by the plant physician with a note in which he stated: "Miss T. has been employed as a clerk in the Engineering Department for approximately one year. When she was seen she was complaining of a severe headache and shooting pains in her back. She was also complaining of dizziness, fainting and chronic fatigue and was obviously greatly emotionally disturbed. Further questioning revealed that she was facing an unbearable situation at home with regard to hostility and conflict with her father. It is felt that a great deal of her emotional conflict is deep-seated . . ." Physically, nothing abnormal was demonstrable. She was interviewed three times. On each occasion she sat with her head bent down, cried a great deal and spoke very little. Six months afterwards, i.e. by January 1944, her feelings of depression had increased so much that she agreed to accept treatment. She was placed on subcoma insulin and received psychotherapy. To establish contact with her, to begin with, was difficult in view of her extreme shyness and inability to talk. She was greatly preoccupied with her strained relationship with her father and with her difficulties in relation to men in general. She found it difficult to look at men. Gradually, after three months of treatment, she improved. She gained some insight into her basic problems and was capable of working half time at her place of employment. She still complained a good deal of feelings of fatigue. (Admission: January to March 1955. Diagnosis: Anxiety hysteria.)

Her improvement was of short duration. In May 1955 she had to be readmitted because she had become increasingly depressed. On readmission she said that she felt the other patients were suspicious of her and hated her. "They think I am a homosexual or something. They think I am going to attack them. I get blank feelings in my head. I have to be on guard all the time or I will fall into their trap." The diagnosis of a schizophrenic reaction in a patient with crumbling obsessive and depressive defences was made. She responded well to E.C.T. and could be discharged symptomatically improved after 14 treatments.

She had another relapse in December 1955 which necessitated her readmission. At the

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time of her readmission she was subject to mood swings, being depressed and retarded one day and elated and over-active the next day. She responded well to overnight care and soon resumed her previous status.

At this time she started to write letters to the psychiatrist who looked after her. Some excerpts from these letters may be given:

(1) "Dear Dr. B.: For a long time I've been wanting to bring out all those feelings that I can't bring out when I'm with you. I hope this time, by writing them down, I'll be able to describe exactly the way I feel. You know already that what is bothering me most is my father. When I realized that the other members of the family were rejecting him, I started to analyze him — analyzing his way of acting, and also when he was speaking. I was trying to know why he was asking this or that. After a while, I don't know why but I had a certain feeling of hate towards him. Every time I came home from work I found it so cold when I felt that my father was in the house. It's just as if I was afraid to look at him or talk to him. Now why am I feeling that way? I don't know. All I know is that I hate myself for those feelings of hate. But now my main problem is that every time I have to talk to you, every time I have to face you or other men, even if it's my boy friend, I can't help it, I have to be cold towards them. I've been analyzing my father so much that I think all men are acting the same way. When I'm with you, it's not my fault but I transpose those feelings just the way I transpose them when I'm with somebody else. I mean Men. The point is that I don't understand these feelings of hate towards my father or other boys. Why do I have to be so cold with them? If I go on acting the way I've been acting since then, I'll never get married. I can't fall in love with men. It's just as if I hate them. And also I hate myself for those feelings. I feel bad especially because I have them towards my father. And that's why also I've never been able to talk to you about them because I felt too bad about them. If I could only understand why I have those feelings maybe it wouldn't be so hard. Then maybe I could change them and when I meet the right man, have the feeling of love that every normal girl has in her life. But the way I feel now I just can't love men.

"Doctor, that's what I'm asking you. Please, with me, would you try to understand why I have these feelings towards every man and especially towards my father? It's awful to hate my father, but I can't help it. Again I'm asking you to help me. I have confidence in you but the trouble is that when I see you I can't forget my father and then I can't speak. Anyway, now you know why I've been acting this way towards you. I hope it will help me to talk. I hope it will help me to make myself believe that you are not my father and that you are not acting the same way as he does or don't think the same way he does. I'd like so much to take away those feelings from myself that I'm ready to do whatever you'll prescribe for me. In the meantime, I remain your patient following the doctor's orders."

(2) "Dear Dr. B.: I want so much your help, doctor, please tell me where to begin. Perhaps my writing down some of my feelings that I have not been able to express to you may be of some help. Doctor, could it be that I am subconsciously trying to solve my own problems by analyzing them myself — and cannot see my way through clearly when it actually comes to speaking to you — because of my set ways of thinking to please myself. I am afraid to face whatever opinion you may have of me and my thoughts . . ."

Rorschach test results presented the picture of an individual who appeared to rely almost completely on projection as a defence mechanism. There was a great deal of aggression and hostility. Ideas of reference were evident. According to the psychologist's report, the patient revealed paranoid trends as well as a loss of ego control in perceptions involving women and men engaged in homosexual activities.

Since March 1956 the patient has stayed at a Catholic Girls' residence, returning home every week-end. She gave no explanation for this arrangement. She is still undergoing supportive psychotherapy and attending occupational therapy. There has been no spectacular change in her condition.

Background

The patient's father, aged 64, came to Canada at the age of 14 on the advice of a brother who had immigrated to Canada a year before. At the age of 25, he returned to Japan for a short period during which he married. On returning to Canada he and his wife settled in Vancouver. Judging by the patient's description, the father is an aggressive, violent-tempered, shiftless individual. He tried his luck as a cook, as a bellboy, as a woodworker, as a repairman and as a car salesman, but kept none of these jobs for any length of time.

So long as the patient can remember, he has been an alcoholic. He beat his wife many a time during his drinking bouts, and she meekly submitted herself, in Oriental fashion, to his bullying tactics and his maltreatment.

The patient's mother, aged 59, married at the age of 20, at which time she came to Canada. She was engrossed in the care of her house and children for a long time. She has always been warm and friendly and has always been apt to alternate between feelings of elation and of depression. The children were affectionate only with the mother and turned to her – and to her alone – with their troubles. Consequently, the patient's father very often felt jealous and resentful of the children's apparent lack of consideration.

The sixth of seven children, the patient was born in Vancouver. Her two older brothers were killed in an industrial accident. She had no feelings of affection for her brothers; on the other hand, she was much too dependent on her two sisters, and especially on the elder one.

The patient grew up in great poverty. During World War II (when the patient was 10 years old) the whole family was interned for a prolonged period. Her childhood was marred by the constant quarrels between her parents. Violent scenes between them were a common occurrence. She bitterly resents that paternal love was denied to her.

Against this background the patient grew up a quiet, shy, subservient child, oversensitive and shut-in. At puberty, even more than before, she withdrew from social contacts. She had always been emotionally labile and subject to mood swings.

The patient started school at the age of seven and carried on doing fairly well until she reached the second grade of Junior High School.

When the patient was 14 years old the family moved to Montreal where her father worked at first as a presser in a cleaning establishment, and then, five years later, started a cleaning business of his own. The patient helped him in this venture without ever being paid for her services.

The strain at home and at work was often more than she could bear. She was utterly unhappy, cried a great deal, ran away from home repeatedly, and suffered from fainting fits.

The patient has had few friends. She had four or five boyfriends who were all young Nisei; none of these affairs went very far.

For the last few years the patient had complained of headaches, dizziness, low back pain and chronic fatigue. Her state of health forced her father, in 1953, to give up his business for which, in view of her knowledge of French, she was indispensable. Since then she has worked as a clerk. Her occupational aspirations were high but she lacked perseverance and was disproportionately disheartened by minor setbacks.

An interview with the patient's father revealed that his acculturation and that of his wife to life in Canada has been inadequate. He speaks English fairly well in contrast with his wife who has little knowledge of the language. At home both parents speak to each other almost exclusively in their native language. After having lived in Canada for about fifty years they still show a preference for Japanese dishes. The patient's older sisters were forced into planned marriages which failed dismally. Both their husbands are sons of Japanese friends of the patient's father.

Comments

There are undoubtedly many factors which may have contributed to the etiology of this patient's illness. Outstanding among them are her upbringing in an adverse home environment with constant marital strife between her parents and conflicts arising from a strained daughter-father relationship. The relevance of cultural factors which distinguish this case from many others can only be surmised. Potentially relevant is the difference in the degree of acculturation between the older and the younger generations, i.e. the perpetuation of cultural values of their country of origin in the parents versus an adaptation to Western cultural values in the daughter.

Case 2.

Mr. T. I., aged 24, began to suffer from sleeplessness in August 1952. One day, shortly afterwards, he expressed the belief that "something terrible" was going to happen to his priest, who was an Italian. On the following day, though rather disturbed and excited, he went to work. There, while helping to crate a radio, he had the idea that his

priest was in one of the crates and was about to be shipped to Italy. After work he wandered about in the city looking for the priest. His behaviour continued to be odd during the following days. He felt that he ought to go to Italy and Japan to trace the priest. He thought that people in the street were talking about him with regard to his relationship to a famous Italian opera singer. He imagined that he was able to receive messages – by telepathy – from his priest. He also imagined that Italians had been putting sedatives in his orange juice. At home his behaviour had been rather erratic. On the day before his commitment he had packed all his belongings intending to leave for Kingston where he had lived previously.

On admission to hospital his mental activity was increased with marked flight of ideas; some of these were bizarre. Affect was fairly well preserved. There were delusional ideas of grandeur and of being persecuted. He had what seemed to be ideas of reference and also had auditory hallucinations. There was some anxiety and tension. The diagnosis of paranoid schizophrenia was made.

He responded well to coma insulin therapy. By the end of September 1952 his delusional ideas had cleared up and he could be discharged.

Recurrence of symptoms necessitated his readmission in August 1954. This time he complained of feelings of insecurity and anxiety. There were no delusions or hallucinations. He did well under supportive psychotherapy and could be sent home a month later. The diagnosis on discharge was chronic latent schizophrenia, paranoid type.

The patient had to be hospitalized again from April to May 1956. On the third admission he had paranoid delusions. He was mute on and off and was hallucinating auditorily. He distrusted his surroundings and behaved in a bizarre manner, moving furniture about aimlessly, piling newspapers here and there, chewing incessantly on the sleeve of his dressing gown, etc. On one occasion he attempted to jump out of the window of his doctor's office.

Under E.C.T. and chlorpromazine, along with sodium amytal, he improved rapidly. Since then he has maintained a relatively good condition.

Background

Both the patient's parents hailed from Central Japan and are of working class origin. They met in Vancouver to which the father had immigrated in 1905 and the mother in 1920. The father has worked for 30 years as a janitor; the mother augmented his meagre income by working as a seamstress. All three sons, of whom the patient is the youngest, were born in Vancouver. During the second World War, when the patient was nine years old, the family was interned for three years. After the cessation of hostilities the family moved to Kingston where the patient's eldest brother attended the Medical School. In 1951 the family followed the same brother to Montreal where he took up an internship.

The patient described his father, now aged 70, as a bad-tempered, self-centred, heavy drinking, hypochondriacal individual, and his mother, now 59 years old, as a cold, disgruntled, nagging woman.

According to the patient's account, he has never experienced feelings of love from either of his parents who, in accordance with Japanese tradition, doted upon their eldest son and ignored the other two.

The picture the patient drew of his childhood is one of extreme unhappiness; he felt unloved and unwanted.

The patient completed his last year at High School but failed in his final examinations. For some time he did not dare to tell his parents about his failure which upset him very deeply. His occupational record was poor. He worked as a cabinet maker, plumber's helper, T.V. tube-reconditioning and shipping worker, but could not keep any of these jobs and others for any length of time because of his extreme sensitiveness to criticism. He had been described as a weak, dependent, indecisive individual, eager to succeed but lacking in self-confidence, stamina and perseverance. So long as he was treated gently and got his own way he did moderately well, but as soon as he came up against obstacles or setbacks he was apt to give up easily. He had a strong desire to be noticed. But rather than achieve his objective he made himself unpopular, for instance at Nisei meetings, by pushing himself to the foreground.

By this time his two older brothers, with whom he had now developed a warm relationship, had moved out of the home, and he was left alone with his parents. He accompanies his mother to divine service for Issei but has no religious beliefs.

Comments

So long as he can remember this patient has been deprived of parental love and affection. His eldest brother, in keeping with the tradition of the Japanese family system, has been the apple of his parent's eye. Long antedating his present illness, the patient felt neglected and unfairly treated. He has always longed – alas in vain – for his mother's affection. He has made feeble, though unsuccessful, attempts at asserting himself and at being noticed.

Case 3.

Mr. T. Y., aged 22, experienced one day, in February 1954, a sharp pain in his right hip and a dull lumbar ache on bending down while taking a shower. This patient, who had been studying mechanical engineering at McGill for the past two years, failed in his examinations in April of the same year. Roughly about the same time he began to complain of pain in his back and of a sensation of tightness in his neck. He also felt great heat at the top of his spine, which travelled down to the bottom and which was associated with a tingling sensation. He felt unable to concentrate on reading and was therefore unable to study after the examinations were over. He did complete the written examination but failed. During the next three months there were two or three occasions when he felt sharp pain in the back of his neck, and since then he has suffered from headache almost continually. He complained of a sensation of tightness all over the scalp, of pressure on the top of his head, and of numbness on the right side at the back of the head. He also felt a constant pulsation just by the lobe of the right ear. Glasses were prescribed but did not help.

In September 1954 he was admitted to the Royal Victoria Hospital. Right from the start a psychological disorder was suspected; yet, to exclude other possibilities a careful physical examination was carried out. C.S.F. and skull films were normal; so was the labyrinth function test. A psychiatrist was consulted who recommended transfer of the patient to the Allan Memorial Institute.

The differential diagnosis was between an anxiety state in a schizoid individual and incipient schizophrenia. The Rorschach revealed no signs suggestive of peculiarity of thought and no evidence of psychosis but the possibility of a developing schizophrenia was considered.

The patient was placed on somnolent insulin and explored further. There was some discrepancy in the description of the home environment. The view that the mother was unbearably domineering, held by the only daughter, was not shared by the sons who, in keeping with Japanese tradition enjoyed many privileges. During his stay at the hospital, the patient's numerous somatic complaints disappeared completely. He was at first reluctant to go home even for weekends but then he accepted the suggestion and could be discharged greatly improved. His discharge diagnosis was anxiety state in a schizoid personality.

The patient was visited at his home in October 1956 by the writer who examined him several times. The following information about the patient's condition during the intervening period and at the time of examination was obtained.

After his discharge from the hospital in 1954 the patient had worked as an operator at a chemical laboratory for about a year. Meanwhile his previous complaints had recurred, such as headache, dizziness, sensations in his scalp, difficulties in concentration and in going to sleep. On account of these complaints he gave up his job and refused to look for another one. Since then he has lived at home doing very little. He gets up late, reads a bit and watches T.V. Most of the time he keeps to his room which has been called "extra-territorial" by the family. As time went on he ceased to go out. Hardly ever does he talk to members of his family. Often he fails to shave himself. On examination he complained of a "bad feeling" but could not explain it. There was a marked flattening of affect and a lack of insight into the abnormality of his behaviour. No delusions or hallucinations could be elicited.

Background

The forebears of the patient's father were poor peasants in the South of Japan. In 1906, when he was 16 years old, the patient's father came to Vancouver together with an uncle. Both of them engaged in trade with Japan but for a variety of reasons their business did not flourish. The father went back to Japan in order to get married and returned to Vancouver after his marriage in 1919.

The patient was born in Vancouver. He is the eldest son of seven children. There are two brothers and two sisters younger than he. The youngest child is a boy nine years old. In 1940 the family was evacuated owing to wartime conditions, and in 1946 they moved to Montreal where they have lived ever since.

Both the patient's parents are Buddhists. The father has been described as passive, quiet, timid, kind, deeply religious and conservative. The mother held the reins of the family. She had the wellbeing of her children at heart but tended to be overprotective, domineering and nagging. When the family moved to Montreal she was so afraid of making social contacts that up to the present time she had not succeeded in making one friend in the new environment. When one of her daughters decided to break out of the family circle in 1950 and to go to Toronto, the mother had a nervous breakdown.

The children were brought up strictly. In accordance with Japanese family tradition, the boys received preferential treatment. Yet, also, heavier demands were made on them than on the girls. Being the eldest son, the patient was pushed hard by his mother and criticized severely by her if he did not live up to her expectations.

According to his own account and that of others, the patient was quiet, shy, submissive, retiring and oversensitive as a child.

He did well at school both in his studies and in games, but flagged in his interests and in his enthusiasm after he had entered college. He stated that the competition was too tough for him.

His social contacts were tenuous and of a superficial nature. He has had no close male or female friends. For some time he had been attending Protestant church services, but he does not know whether his allegiance is to the Protestant or Buddhist religion. Gradually, as the years went by, he has withdrawn more and more from social contacts. Even prior to his present illness he liked best to stay at home in isolation; occasionally he went out to a dance or to a game.

Comments

The eldest son of a large family, this patient is the offspring of a passive, ineffectual father and of an active domineering, driving mother. As is common in Japanese families, heavy demands were made on the patient as the eldest son. To buy his mother's affection he had to perform well – and exceptionally well. The price he had to pay for her protection was complete submission to her demands. Outwardly he submitted to her demands uncomplainingly and unprotestingly; inwardly he was apparently seething with rage. When college Life – his Alma Mater – made demands on him beyond his capacity, he broke down with schizophrenic symptoms.

Discussion

The parents of the three patients presented came to Canada from Japan 40 or 50 years ago. Many of the Japanese immigrants in those days experienced serious hardships on arrival, but by adaptability, perseverance, hard work and frugality they overcame difficulties which were often greater than those which had to be faced by immigrants from Europe. Most of the Asiatics who came to North America at this period knew more or less what to expect. They had to cope with considerable environmental stress and strain.

Nearly all the men, at the time of their immigration, did not intend to settle down in Canada permanently; they hoped by getting rich quickly to acquire a higher status on their return to their native village. Especially those who were unsuccessful failed to identify themselves with the country of immigration. Even after marriage and the birth of children, they still nursed the dream of an eventual return to Japan (1).

As far as the first generation (Issei) is concerned, for the reason given assimilation has been slow and acculturation minimal. These men and women ate Japanese food and read, preferentially, newspapers and magazines in their native language. They spoke only Japanese to one another and confined themselves in their social contacts to fellow Japanese. It was very rare for them to

call on, or to receive a visit from, white people. They made up their own church group which functioned as an exclusive community centre.

Like other minority groups with distinctive racial physical characteristics, Japanese immigrants were subjected to a fair amount of discrimination. In-group formation was partly forced upon them by hostility towards them and discrimination against them on the part of the society in which they had come to live and was partly self-sought owing to cultural differences and language difficulties. Discriminatory legislation as regards employment reinforced the strength of the bonds of the Japanese-Canadian communities.

The basic cultural differences between Occident and Orient are enormous. As Ruesch (7) stated, if the cultural distance is great, only slight acculturation within the lifetime of the migrant is likely to be possible; the efforts of the migrant then have to be directed in such away that he can become a member of an ethnic, religious, or occupational group. The Japanese immigrant in this country is a good example of this. When a person is transferred to a different cultural environment, his previous experiences generally do not lend themselves to the solving of difficulties which arise in the new environment because of change in the system of values, symbols and techniques of mastery. Consequently, it is hardly surprising that immigration not infrequently reinforces pre-existing personality difficulties and that it may lead to precipitation of psychological disorders.

Immigrants are apt to identify with – not just imitate – the class or group in the host society with which they feel most familiar. Such identification did not materialize in the Issei because their cultural values are so deeply ingrained that they are difficult to shift. The Issei who had failed in assimilation and acculturation retained their culture-bound rigid attitudes and hoped that their children would be more successfully absorbed by the host society. However, as Ruesch has pointed out, the problem became even more complicated in the second generation. Tension arose in the areas where the two value systems required contradictory behaviour.

To understand why most of the conflicts between the Issei and Nisei have been concentrated in certain areas, due regard must be given to the Japanese family structure and its relationship to the general system of values and obligations by which Japanese live. What follows may throw into relief some general features of the culture and society in which the Issei were reared and may be helpful in understanding the problems and conflicts of the patients described.

Male children in the traditional Japanese family are the favourites. On the other hand, heavier demands are made on the sons than on the daughters. The eldest son is the most favoured but also the most severely disciplined in the family because it is he who later on must carry the heaviest responsibility for the family. Female children are taught to be submissive and subordinate to males. They are expected to fulfill their own well-defined obligations which are just as manifold as those of the males. Be they male or female, Japanese receive much support and security from their family, but the closely knit family structure and the emphasis on obligation entails that Japanese, in all their dealings, regard themselves – and are regarded by others – as representatives of the entire family group rather as individuals responsible, and held responsible, for their actions. Japanese parents who have fulfilled their obligations to care for their children and to provide them with the best possible education can be sure that, in accordance with tradition, they will be looked after by their children in old

age. (Cases 2 and 3). Most Nisei accept the traditional respect for their parents, but conflict and confusion are bound to occur if the system of values of their country of origin upheld and handed down by their parents clash with the system of values of the country in which they have been reared. For instance, marriages used to be arranged by parents in Japan until recently, and even now some Issei parents dictate the choice of marriage partners. Maintenance of this social custom is bitterly resented especially by Nisei females. (Case 1). The change in the pattern of marital selection is a good indication of the breakdown of the authoritarian pattern of family relationships. The parents' authority is still more or less absolute in those families in which, by holding the purse strings, the father can impose his will on his children (Case 1 and 3). The Nisei's economic dependence on the Issei forces him to knuckle down to his dictates.

The Japanese family is founded upon two fundamental propositions: the unquestioned and absolute supremacy of the father and the absolute self-sacrifice of the mother. These two fundamental propositions in the family derive from more general "existential" value orientations, or better, generalized socio-cultural assumptions which imply the indubitable, biological and natural superiority of the male.

Nisei, as well as Issei, have still not eradicated the painful memories of the discriminatory treatment inflicted upon them before and especially during the war. Most families were severely shaken by the horizontal and vertical dislocation during wartime (8).

It is obvious that the vast majority of the Nisei are anxious to be accepted and to be assimilated by the dominant middle-class society (2, 10). Even in the closely integrated pre-war community, in a generally hostile environment, the acculturation of the Nisei had made considerable progress. However, lack of acceptance by members of the dominant society prevented the Nisei from utilizing the acquired cultural tools to secure their integration into the larger society. Thus they constituted a truly marginal group – rejected by most Issei as not being good Japanese, while at the same time unable to assume their desired position as good Canadians. Unable to prove they were "good Canadians", the Nisei were forced back into dependence upon their own ethnic community, a move which made the cultural conflict all the more obvious.

The case histories presented should be considered in the light of the above-mentioned ethnical situation and background.

The extent to which environmental stress, especially in childhood, can be held responsible for the etiology of schizophrenia has been much debated. According to Lidz and Lidz (4) the incidence of parental deprivation and broken homes is significantly higher in schizophrenic patients than in normals. A correlation has been established between the degree of abnormality of the early environment and the severity of the later developing mental illness. These views, however, have not remained unchallenged (Oltman et al) (5).

It has been postulated that schizophrenic illness is an adjustive response – a protection against strong feelings of helplessness and worthlessness (9). By withdrawal from reality the patient tries to escape from situations or conflicts which give rise to strong feelings of inadequacy or constitute a threat. Schizophrenic withdrawal has been regarded as a means of protecting the patient from overpowering feelings of guilt and anxiety which could be traced back to early interpersonal relations.

Be this as it may, as has been stated, it is apparent that, for a variety of reasons, there is considerable difficulty for Nisei to establish a positive identifica-

ton with their parents. This difficulty is manifest by feelings of hostility towards the Issei.

Such studies of mother-child relationships in schizophrenics emphasize the feeling of rejection and aggressive attitudes on the part of the mother (3, 6). Nisei children are so dependent on their mothers that they are deeply affected — and perhaps more than others — by their mothers' emotional attitudes. In such cases as we have observed, we found that a mother's perfectionistic, disciplinary, punitive, hostile or rejecting attitude towards her child had profound repercussions and may have paved the way to the development of schizophrenia.

Evidence has been presented in support of the etiological relevance of disturbed parent-child relationships to the etiology of schizophrenia in Nisei. In the light of the observations made, the development of schizophrenia in Nisei may be regarded as a "chain reaction" caused by the maladjustment of Issei parents within the socially "closed" family.

Summary

The case histories of three Japanese-Canadian schizophrenic patients (two male, one female) were studied with a view to evaluating the relevance of socio-cultural factors to the etiology, symptomatology and course of the illness. Following a brief description of their socio-cultural background, the personalities of their parents and the interaction between Issei and Nisei were described.

The data obtained lend support to the assumption that external stress is of paramount importance for the etiology of schizophrenia.

Essential features of Japanese family structure in its relation to conflict between first generation (Issei) Japanese Canadians and second generation Japanese Canadians (Nisei) have been discussed.

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Résumé

Les histoires de cas de trois patients schizophrènes de descendance japonaise (2 hommes et 1 femme) ont été étudiées dans le but d'établir les relations entre d'une part les facteurs socio-culturels et d'autre part, l'étiologie, la symptomatologie et l'évolution de la maladie. Après une brève description de leur passé socio-culturel, on considéra la personnalité des parents et les relations d'Issei et de Nisei.

Les données obtenues supportent l'hypothèse que le stress d'origine externe est très important dans l'étiologie de la schizophrénie.

Les traits essentiels de la structure d'une famille japonaise furent discutés en regard d'un conflit entre la première génération (Issei) et la seconde génération (Nisei).

ANNUAL MEETING
CANADIAN PSYCHIATRIC ASSOCIATION
Halifax — 1958

Friday - 20th June 1958

9.00 a.m. Registration – Auditorium, Y.M.C.A. Spring Grove Road, Halifax.

9.10 a.m. SCIENTIFIC SESSION – Auditorium, Y.M.C.A. Spring Grove Road, Halifax.
(1) "Continuity of Patient Care – Dr. C. A. Cleland.
(2) "Therapeutic Aspects of Mental Hospital Organization – Dr. Ian Clancey.
(3) "Multi-Disciplinary Study of Spontaneous and Habitual Abortion" – Dr. Atlee and Dr. R. Weil.

12.30 p.m. LUNCHEON–Courtesy of Provincial Government of N.S. at Lord Nelson Hotel.

2.00 p.m. ANNUAL GENERAL BUSINESS MEETING–Auditorium, Y.M.C.A.

Evening COCKTAIL PARTY and DINNER and DANCE–Lord Nelson Hotel.

Saturday - 21st June 1958

9.00 a.m. SCIENTIFIC SESSION – Auditorium, Y.M.C.A.
"The Paranoid Patient" – Dr. R. R. Prosser.
"An Holistic Theory of Schizophrenia" – Dr. G. J. Sarwer-Foner,
"Short term psychotherapy" – Dr. Carlo Bos.

Evening Shore Dinner – lobsters and beer – at Hubbard's beach. Transportation will be provided. Will those wishing to participate apply for reservations to:
Dr. F. A. Dunsworth, 249, Quinpool Rd., Halifax before 18th June 1958.

We request that the C.P.A. members who desire to attend fill out the C.M.A. application blank for accommodation and send it to the C.M.A. Housing Committee in Halifax, as this will avoid confusion.

PERIODIC CATATONIA*

M. Boyce, M.D., D. Psych.[1]

Kraepelin made several attempts to define, descriptively, what is now known as schizophrenia within the framework of a general classification of mental illness[23]. It was described as "Dementia Praecox or the Group of Schizophrenias" by Bleuler as he felt that several clinical pictures could be included which presented the core symptoms of autism, flattened 'feeling-tone', disturbed associations and disruption of the thinking process[5].

Hospital admission statistics reflect only in part the high incidence of schizophrenia and the need for a more distinct aetiological definition[10, 11] Considerable emphasis has been given to the search for evidence of deranged metabolism. Kraepelin once suggested that these illnesses were the expression of auto-intoxication by products of an abnormal metabolism leading to pathological cerebral changes[23]. However, attempts to interpret the possible relationship of some facet of metabolic disorder (e.g. biochemical) to the total disorder, in those instances in which it would seem to have been detected, have varied due to the rather gross lack of sufficient basic data[1].

Most studies utilizing the hypothesis-verification method (contrast of test groups and controls) have suffered from the heterogeneous nature of the schizophrenic disorders and difficulty in obtaining agreement upon diagnostic criteria among clinicians. As a result, these studies have often produced conflicting findings.

Perhaps the most well-defined group within the schizophrenic constellation was first described by Kraepelin as 'Periodic Dementia'. He described it as being characterized by frequently recurring catatonic episodes with intervening phases of remission. He made some comments upon the rather abrupt onset of the catatonic episodes (most frequently of confused excitement) and loss of weight during these phases. The pronounced periodicity peculiar to this disorder intially led Kraepelin to consider it as belonging to the manic-depressive disorders although he later felt that there was little evidence to support this view. In the eighth edition of his "Textbook of Psychiatry" he stated that it made up not quite two per cent of all cases he included under the diagnosis of dementia praecox[23]. The more well-defined nature of this illness and the intrinsic self-control that it provides in the remission phases lend themselves to intensive serial observation and study. Investigation of this illness presents the possibility of detecting constantly recurring underlying aetiological factors which may then be related to the other similar illnesses – particularly within the schizophrenic group of illnesses.

Gjessing in Norway has conducted exhaustive longitudinal metabolic studies on a relatively small number of cases of Periodic Dementia (which is more specifically referred to as Periodic Catatonic Schizophrenia or 'Periodic Catatonia')[13, 14]. Gjessing's studies have been the major ones conducted in this illness. They have resulted in considerable enlightenment and have served as a stimulus to similar research by a few other investigators.

Gjessing has employed a battery of metabolic tests and investigations– applied over extremely long periods (often several years) on the cases of Periodic Catatonia that he has studied. By placing subjects on a fixed, low protein intake and eradicating all sepsis and any condition involving unusual

*Presented at a Regional Clinical Meeting in Psychiatry, University of Western Ontario, London, Ontario, on February 4th, 1957.

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protein catabolism or storage, morbid phases appeared to occur at more regular intervals and remissions seemed slightly greater in duration in some cases. In these cases he also observed a sudden shift from a sustained ('syntonic'), predominantly vagotonic state with abnormally low basal metabolism in the remission to one of sympatheticotonia and elevated B.M.R. in the morbid (disturbed) state (which could be either complete stupor or sustained excitement) in closely synchronized fashion. He designated these as 'synchronous-syntonic' (S-S) types and such highly specific cases within the Periodic Catatonia group have been the focus of his more exhaustive studies. In addition, it also seemed that a cyclic alternation of body nitrogen level occurred, presenting cycles of equal duration to those of the psychic and autonomic states. It has appeared, however, that the point of onset of the psychic disturbed phase can be found at different points on the nitrogen curve and may occasionally tend to shift, during the illness, in the same patient[14]. These findings were made from Macro-Kjeldahl estimation of nitrogen intake and output and variations in level were in order of from 15 to 30 grams. Serial N.P.N. values were also found to reflect phasic change in nitrogen level fairly accurately although they remained largely within normal limits[14]. Other cases were found to have less regular psychic alternations, mixed autonomic changes, and irregular changes in nitrogen balance. These have been described as 'asynchronous-asyntonic'.

Gjessing has produced a successful method of treatment of the S-S case. This consists of initially administering thyroxine, parenterally, in rapidly increasing doses. The best result appears to be obtained by starting therapy when it seems that the patient is just approaching the phase of maximum nitrogen retention. Maintenance therapy consists of continuing thyroid substances (dessicated thyroid) and a low protein diet. It was originally stressed that these procedures cause rapid, excessive depletion of the body nitrogen and prevent any significant re-storage – the body nitrogen balance remaining on the negative side[13].

A case which has appeared to be a synchronous-syntonic type of Periodic Catatonia described by Gjessing was admitted to the Ontario Hospital, London, Ontario, on November 17th, 1954, and illustrates the nature of the illness as well as some aspects of management and investigation.

Mr. K. S. was 24 years of age at the time of admission. He was born in Eastern Germany. There is no history of mental illness in other members of the family. The father was a businessman and the family enjoyed a good urban social and financial standing until the disruption caused by World War II. The mother was undoubtedly the more aggressive parent, with greater social aspirations. Patient was the youngest of 4 siblings, the mother's favourite, but was, nevertheless, restricted in his activities and often confined to the home to practise lessons. There is a history of some early neuroticism which includes nightmares, thumb-sucking and nail-biting to a considerable age. In a letter, the mother (who is now in West Germany with two unmarried daughters) describes the patient as having been an obliging but somewhat restless child. Patient achieved average school standings with satisfactory progress and attended until the age of 15 when his father and brother were taken by the Russians (and, presumably, subsequently died or were killed). The remainder of the family was moved to the Polish zone. Patient had a chronic desire "for adventures and undertakings" and soon struck out for West Germany alone, although misgivings over severance from his mother soon developed and persisted. He became an apprentice mason in West Germany and qualified in this trade in 1951. Patient came to Canada in that year and worked in various locations

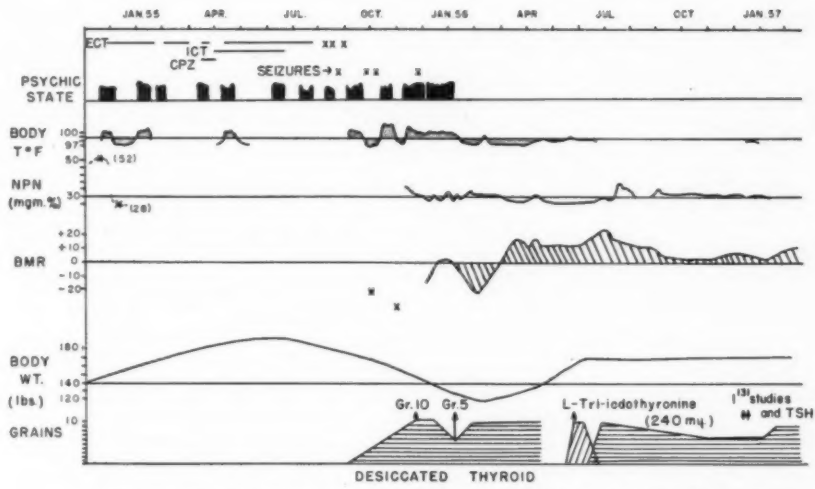

Figure 1.—Mr. K. S. Relationship of initial physical therapies, ictal episodes, body temperature, N.P.N., B.M.R., body weight and therapy with thyroid substances to changes in psychic state.

prior to settling in London, Ontario, the year preceding his admission to hospital. He was a very cautious, conscientious, industrious worker, but made very few lasting contacts socially. He had just begun to establish himself independently in business shortly before admission. He was meeting with some difficulties, however, in spite of his considerable strivings to succeed.

There were no significant previous illnesses except scarlet fever during childhood. There was no active interest in girls. He maintained himself as a rather aloof, cautious, rigid person. He was exacting, ambitious and somewhat intolerant of others and occasionally allowed expression of rather uncontrolled anger in his interpersonal contacts. He was interested in things of a mechanical nature and in music and reading.

Four days prior to admission some unusual behaviour was noticed by his acquaintances. He constantly rubbed his hands together and would terminate conversations abruptly and dramatically. He became preoccupied with ideas that he was mentally ill, unworthy of anything, and that the world would be better off were he dead. He shut himself in his room for long periods but eventually found his way to the grounds of the Ontario Hospital, London, where he appeared to be grossly disturbed and confused and was subsequently admitted.

On admission patient was extremely manneristic, assumed bizarre postures and would frequently lie mute, rigid and motionless, staring toward the ceiling of the ward. This would be interrupted by outbursts of excitement and destructiveness. The rare utterance offered indicated gross thinking disorder. He was questioned concerning his father and replied, "The soul of my dead father is with me — but everything depends upon television." Facial expressions were inappropriate to the reality situations confronting him and he was hallucinating in both auditory and visual fields.

Electroconvulsive therapy (ECT) was begun shortly after admission (Figure 1). This seemed to result in some improvement although patient exhibited a disturbed episode of about 15 days duration prior to the termination of the course of 24 treatments given at that time. Improvement was short-lived.

ECT was given 'symptomatically' and a total of 88 treatments had been given by September, 1955. During this time chlorpromazine (CPZ) had been given over a two-week period. (Dosage, 150 mgms. daily, and duration of administration probably did not provide an adequate trial of this therapy.) Insulin coma therapy (ICT) was administered from March 28th to June 22nd, 1955. This consisted of a total of 60 treatments, satisfactory coma being obtained on only 17 occasions. Patient displayed some moderate insulin resistance (dosage of up to 950 units of regular insulin was given). This was particularly evident during disturbed episodes. No 'grand mal' seizures occurred during the course of ICT. As shown on the accompanying chart, both ICT and ECT were offered during the latter part of this phase of therapy but were not given simultaneously. No unequivocally significant or lasting improvement was achieved with any of these measures.

In the latter part of August, 1955, the patient exhibited a spontaneous, generalized, 'grand mal' seizure. It was at this point that the patient's course in hospital was again reviewed with good notes available as patient had been on continued active therapy. It was discovered that he exhibited relatively regularly recurring episodes of gross catatonic disorder usually lasting 9 to 15 days separated by relatively lucid intervals of varying duration, – never longer than 40 days (Figure 1). It was also apparent that there was a sudden, dramatic change of state (often over a few hours or less) at the onset, and, to a lesser degree, at the termination of each disturbed episode. The diagnosis of Periodic Catatonia was considered. It was also observed (on review and in episodes that followed after August, 1955) that temperature would rise as high as 101° (corrected to oral reading); pulse to 130 per minute; respirations, 32 per minute; together with rise in arterial blood pressure (eg. 156/102, 160/85) during the disturbed state – even when recorded during the occasional periods of mute immobility that would appear during this phase. Sleep rhythm was grossly disrupted. Muscle rigidity and cataleptic phenomena would appear. Pupils would become widely dilated. There was occasionally some moderate weight loss. During the remission phase, blood pressure readings would be slightly below average normal for his age. Other findings would be of this order: temperature, 98.0°; pulse, 68 per minute; respirations, 18 per minute. B.M.R. obtained shortly after cessation of the episode in September, 1955, was –19 and appeared to be a satisfactory tracing. A value of –29 followed the episode of October, 1955, and an N.P.N. of 36 mgms. per 100 cc. was found on the day of onset of the next episode in November, 1955. The subsequent N.P.N. values of that episode were also within normal limits but were progressively lower (lowest value, – 28 mgms. per 100 cc.). (It is perhaps significant that N.P.N. on admission in a disturbed phase was 52 mgms. per 100 cc. despite lack of evidence of dehydration. An N.P.N. value of 28 mgms. per 100 cc. was obtained in the following remission phase–Figure1). These findings can only be considered a rather crude reflection of nitrogen balance but might suggest that remission phases may be accompanied by tissue nitrogen retention and the disturbed phases, particularly during their early portion, by excessive loss of tissue nitrogen and relatively high blood nitrogen and excretion.

During the remission phases of the illness the patient exhibited moderate apathy and minimal insight but functioned in a relatively normal manner. In the disturbed phases he would exhibit grossly psychotic behaviour – the extremes of catatonic excitement with occasional mute, stuporous intervals, muscle rigidity, negativism, grimacing and seemingly outlandish posturing. He was sometimes found lying nude in his excreta upon the floor, shouting, assuming positions of

prayer or of flying. Listening attitudes and suspiciousness were noticeable at times, but he did not present well-structured or persistent delusions. He displayed irrational destructiveness towards environment and self. Hallucinations were extremely varied in nature. At times he seemed completely absorbed in these experiences whereas he could occasionally divorce himself from them to a sufficient degree to doubt their reality.

Dessicated thyroid was first administered on September 1st, 1955. It was felt that adequate dosage of dessicated thyroid would achieve the same end as parenteral thyroxine in more gradual and perhaps less stressful fashion. There was relatively little guide as to what might be the proper timing of maximal effect of thyroid medication. Therapy was begun abruptly without further investigation as deportation proceedings were imminent. It should be noted that phenobarbital was given from early September but never exceeded dosage of 3 grains a day and was subsequently discontinued.

Dessicated thyroid was progressively increased. In late September, 1955, patient was placed on a low protein diet (of 2,500 calories containing 10.5 gms. of nitrogen daily) of either fluid or solid consistency. Four episodes followed institution of thyroid therapy, the last two being lengthy and almost continuous. Dosage of dessicated thyroid reached 10 grains per day, but was reduced to 5 grains per day following the end of the last disturbed episode. It has subsequently been raised to 9 grains daily and has usually been maintained at this level. A three-week trial on L-tri-iodothyronine* up to doses of 240 micrograms per day was attempted in May, 1956, but seemed to offer no particular advantage and required more constant vigilance. Thyroid substance was given in dosage to maintain B.M.R.'s in the upper normal range. Any attempts made to reduce dosage have resulted in reduction of B.M.R. to near subnormal range. Vitamin-mineral supplement has been given daily and caloric intake gradually increased. Since the last disturbed episode in December, 1955, patient has gained in weight from 117 to 154 pounds.

This man has shown progressive improvement in his behaviour. His insight seems at times rather remarkable. It is felt that he has been functioning at his prepsychotic level for more than a year. He is now living in London. He is working and attending night school classes. Psychological tests revealed that he is functioning within the bright normal range of intelligence.

Periodic assessment has continued until the present time. During a period of attempted reduction of dosage of dessicated thyroid attempts were made to determine the thyroid gland activity as measured by radioactive iodine pickup. In early December, 1956, while on a dose of 5 grains daily, he was found to have almost no (6%) pickup when measured 24 hours after administration of I^{131}. In January, 1957, he was given 5 units of TSH intramuscularly daily for two days. He was given a test dose of I^{131} the following day and the 24-hour pickup was found to be 19% (normal 20-40%) and in 48 hours 20% (normal 20-40%). These findings were interpreted as indicating almost no function of the thyroid on that dosage of dessicated thyroid but that the gland could be stimulated by the anterior pituitary thyrotrophic hormone. Unfortunately, similar studies were not carried out before therapy was instituted.

As mentioned, a grand mal convulsion was observed in August, 1955. Seizures were observed on three more occasions between that date and late November, 1955 (Figure 1). Phenobarbital, in low dosage, was given until February, 1956. No more fits have occurred. Neurological examination, spinal

*L-tri-iodothyronine sodium was supplied by Glaxo (Canada) Limited; has since been marketed under the registered name Tertroxin.

fluid analysis, skull x-rays, E.E.G.'s (4 in all, with activation which included photic stimulation, obtained following the last disturbed episode) and pneumoencephalogram have all been within normal limits.

It should also be mentioned that the patient was diagnosed as having Enterobiasis and treated successfully for this in July, 1956. It was uncertain as to how long the condition had been present.

Discussion: Gjessing[13, 14] reports that some of his cases of Periodic Catatonia were found to present a history of psychopathy in relatives – occasionally, Periodic Catatonia itself. Onset seems to be more frequent before the age of 20. It is estimated that two-thirds of the cases are female although Gjessing has largely confined his studies to males to avoid the added variable of menstrual cycle. Onset of the illness is usually sudden although there are often indications of some alteration of conduct for a few days prior to onset. Once the illness is established, morbid phases may occur with increasing regularity. In some cases morbid phases may tend to become greater in duration and occur more frequently – even daily. The illness may continue relatively unchanged for decades; however, after several years, some cases may exhibit a prolonged period of abeyance. There is also some speculation as to whether the morbid phase may become chronic or 'non-periodic' (vide infra).

As a rule, a condition sets in of marked impairment of all faculties with poverty of ideation, emotional flattening and mannerisms which is evident during all phases of the illness. The disturbed phase may be predominantly one of automation excitement or stupor with other symptoms usually considered more pathognomonic of schizophrenia of the catatonic type.

Several of the phasic alterations in the synchronous-syntonic cases have been illustrated by the cause described. In the morbid phase these include mydriasis, frequently some clamminess of skin, fine tremor, shortened and restless sleep, some loss of weight, high normal or slightly above normal B.M.R., increased temperature, pulse and blood pressure. A high fasting blood sugar, urinary retention and haematological changes are also described. In the interval phase B.M.R. is below normal; a tendency to diuresis, increased excretion of sodium chloride and electrocardiographic changes have been described. Other findings have included phasic variations in urinary constituents and acid base equilibrium[14]. Gjessing has suggested that some of these features may vary somewhat depending upon the time relationship of cyclic mental alterations to phasic nitrogen changes. Additional phasic metabolic changes have been detected by Gjessing but, as yet, have been difficult to interpret.

Stokes[34, 35] has reviewed Gjessing's work stressing the opportunity for research presented by this disorder. Hardwick and Stokes[17] reported metabolic studies and therapeutic trials conducted during the early war years. Their results tended to confirm nearly all of Gjessing's findings, although Hardwick felt that results of therapy were not uniform. (It seems possible, however, that some of Hardwick's cases may have been atypical and led him to point out the necessity of attempting to define the more typical case – in which it appeared that uniformily good results might be expected.)

Since 1949, carefully controlled studies have been conducted on cases of Periodic Catatonia at the Toronto Psychiatric Hospital under the direction of Professor Stokes[6, 16]. Although always orientated to broad, serial study, much attention has been devoted to endocrine aspects – particularly to pituitary-adrenal cortical axis. Observations were made on some of the patients which suggested the presence of cyclic alterations within this axis although these variations were not always too well-defined or certain due to limitations of

present day methods of measurement. Therapy (utilizing A.C.T.H., adrenal cortical and sex steroids, etc., as seemed indicated) did not lead to results that would seem to confirm definitely many of the hypotheses considered from time to time during the research. However, all the typical 'synchronous' cases with stable metabolic changes in one direction in each phase responded to the type of therapy outlined by Gjessing. One other case that appeared to be of this type was possibly somewhat atypical in that a head injury precipitated the onset of the illness. This man did not respond to thyroid-diet therapy but, interestingly, has recently exhibited a gratifying response to lobotomy[26]. Bonkalo, Lovett Doust and Stokes[6], at Toronto, have also demonstrated that serial electroencephalographic studies reveal changes coincident with the phasic psychic changes which are constant for the individual patient. In three cases reported, both E.E.G. alpha incidence and amplitude fell sharply during the disturbed phase. The alpha rate rose steeply in two and fell in the third case. Capillary anoxemia, which could be aggravated excessively by apnoeic and other stress, also closely corresponded in time to the disturbed phase. Intermediate changes were noted just before and after the disturbed phase. These particular phasic alterations were also seen to persist for sometime after compensation (lasting remission) had been attained by successful therapy. The Toronto group have recently turned attention to study of possible changes in adrenal medullary function.

Lindsay[25] reported two cases which he considered to present Periodic Catatonia but they were not studied closely metabolically. Both showed transient response to ECT. Only one responded to the Gjessing method of therapy — with moderate improvement and the disappearance of cyclic change. Rowntree and Kay[30] have reported two cases which were not the typical Periodic Catatonia of the synchronous-syntonic type as described by Gjessing (ie. phasic metabolic changes, synchronous with phasic psychic change, sustained predominantly in one autonomic direction). Nevertheless, some phasic variations in adrenal cortical function were detected which seemed related to changes in mental state. In addition, the presence of a state of cerebral excitation was consistently observed electroencephalographically when improvement in psychic state periodically (ie. interval, remission phases) presented. A lobotomy was performed on one of these cases and did not alter the periodicity nor did administration of thyroxin-dessicated thyroid modify the illness. Ashby[2] reported an atypical case exhibiting temporary response to ECT in disturbed phases. Results of biochemical investigations tended to indicate that a specific change in adrenal cortical secretion occurred with ECT-induced remission. It was also noted that this patient was insensitive to insulin and adrenalin. The total neuro-endocrine changes were complex and open to several hypothetical interpretations.

Danziger and Kindwall [7, 8, 9] have frequently reported therapy with thyroid substances and vitamin supplement in a variety of functional psychiatric disorders. Their cases described as Periodic Relapsing Catatonia were presented as similar to Gjessing's Periodic Catatonia. However, none was described in great detail and the cases were not intensively investigated. They claim good results in some cases with thyroid-vitamin therapy alone while others responded to this therapy in addition to other physical methods. Medication was usually given in the form of dessicated thyroid and Vitamin B complex orally. The highest tolerated daily dose of dessicated thyroid was given, and was usually attained by several increments. Treatment was started during any phase of the illness. Patients were maintained on dosage near the maximum tolerated.

Even in cases of definite synchronous-syntonic Periodic Catatonia (and where environmental variables have been held to a minimum in investigation) the total nature of the disorder and interrelationship of the results of research have not been fully apparent. In the patient that has been described, there was little to suggest any primary disturbance in the thyroid gland. The phasic variations in B.M.R. are open to innumerable interpretations. Radioactive iodine uptake studies were in no way suggestive of primary thyroid disorder; the patient was receiving 5 grains of dessicated thyroid daily at that time and thyroid gland activity may be markedly reduced by dosage of this or higher level[9]. Adequate response to TSH was apparent. Radioactive iodine uptake studies conducted on other cases have produced rather consistently low-normal range results[26]. The Toronto group have demonstrated protein-bound iodine values within normal level in some of their patients during both disturbed and interval phases[16]. Nevertheless, Danziger and Kindwall[9] propose that a basic disequilibrium may exist within the pituitary-thyroid axis. They suggest that thyroid substances, given in sufficient dosage, reduce the production of both endogenous thyroid hormone and thyrotrophic hormone to very low values and provide sufficient exogenous thyroid hormone to permit rise of B.M.R. to physiological levels. (That this latter change is essential to recovery is questionable, however, as will be evident in subsequent discussion.) Gornall et al.[16] proposed several possible interpretations of the knowledge presently obtaining: possibly circulating thyroid hormone is not in a biologically active form in the interval or remission phases but reverts to qualitatively correct form in the disturbed phases; other hormonal imbalance may antagonize thyroid hormone or directly interfere with mechanisms involved in oxygen utilization at the cellular level. It was also suggested that tissue cells may be unable to utilize oxygen at a sufficient rate under the influence of a normal amount of circulating thyroid hormone but this has seemed an unlikely situation as cellular metabolism (B.M.R.) increased markedly during the disturbed phase while protein-bound iodine remained at the same level throughout both phases. Gjessing has observed three cases of spontaneous remission. In these, the 'vegetative'[14] or autonomic and psychic variations are eliminated first, then variations in the nitrogen curve remain within normal limits and, finally, normalization of B.M.R. may occur over several months. This suggests that moderate reduction of total body oxygen consumption rate as represented by B.M.R., alone, is not the responsible factor.

Gjessing's findings and therapeutic regime seem to indicate that nitrogen metabolism is of special aetiological significance in these cases – that the nitrogen cycle seems, in some way, to govern the phasic mental change. Others' investigations have tended to confirm the presence of this diphasic nitrogen cycle – one of body nitrogen retention and one of excretion, together being of similar duration to that of combined psychic morbid and remission phase[16, 17]. However, Stokes[17] demonstrated a lack of response or of change in the rhythm of the illness on varying the protein intake and nutritional state. It was specifically shown that the sequence of changes in mental state occurred even when phasic changes in the nitrogen curve were not apparent above a critical and high level of body nitrogen retention. These findings seem to indicate that nitrogen balance and the cyclic changes in mental state are possibly not directly aetiologically related.

Gjessing suggests that this illness is an expression of disruption of central autonomic ('vegetative') regulation in the enzymic level – the result of some toxic factor which may be related to altered nitrogen metabolism. Lindsay[25]

has offered similar views and made reference to the several agents that can be used to produce experimental catatonia. The Toronto workers have concluded that the total "significant series of biological happenings" which rhythmically occur do result in the psychomotor fluctuations seen in this illness. They describe a case presenting a phase of prolonged stupor with atypical, labile, vegetative changes in an illness which, otherwise, had exhibited short, regular, diphasic cycles – well-defined in both psychic and vegetative spheres. They suggest "that this prolonged stupor essentially represents a series of catatonic stuporous disturbances which follow one another with insufficient metabolic change during the compressed 'interval' phases to permit the emergence of a clinical remission". They suggest further, that "determinants of such intrinsic pattern changes in an otherwise inexorably phasic disturbance may well be extrinsic and dependent upon such well recognized factors as intercurrent infections, shock treatment and the like" and may present seemingly constant catatonic disorder of the more common (non-periodic) variety, or permanent remission. These postulates might serve as explanation of the appearance of the two prolonged, almost continuous, terminal disturbances when dessicated thyroid was administered to Mr. K. S. Gjessing[13] has commented upon the appearance of supernumerary, although not necessarily continuous, disturbed phases which appear to relate to timing of maximal effect of thyroid substance offered.

The relative constancy of response to the Gjessing regime of therapy in the synchronous-syntonic types is an intriguing facet; the exact mechanism of its beneficial action in this disorder remains unknown. Patients with the "myxoedematous madness" (Ascher)[3] of primary hypothyroidism have often responded dramatically to replacement therapy. Thyroid substance has been used in many therapeutic trials in schizophrenic illnesses. Hoskins[21] estimated that 10% of the schizophrenic population of large mental hospitals may benefit from thyroid medication and found that those cases exhibiting low B.M.R., low urine nitrogen content and secondary anemia showed some degree of good response to thyroid substances. Sargant et al[31]., and Sargant and Slater[32] have reported use of thyroid but have been unable to define many specific indications for its use apart from Periodic Catatonia. Hardwick (1941)[17], on reviewing the literature, also remarked that those cases successfully treated with thyroid substances showed a considerable resemblance to cases of Periodic Catatonia. Reiss[29] has indicated the multiplicity of factors that may determine the choice of thyroid and other endocrine therapy and it seems possible that continued research will provide further enlightenment in this sphere. Whether the range of favourable results will be extended by use of L-tri-iodothyronine remains to be determined. As noted, it seemed to hold no particular advantage in the case described here although its rapid action would seem ideally suited to initial therapy in these cases of Periodic Catatonia (if an oral medication is practicable) – to replace thyroxine.

The case described also raises the question of relationship of epilepsy and schizophrenia[33]. There is no history of fits during the patient's childhood or in his family. This man was discovered to have Enterobiasis which may have been of significance when one considers the frequency of fits in children infested with pinworms (and may well have played some role in the phasic changes of mental state also)[4]. The appearance of spontaneous seizures has been attributed to electroconvulsive therapy[15, 18, 22, 27, 28, 36]. Whether a definite relationship exists between epilepsy and thyroid disorder is uncertain[12]. Some have felt that there is a significantly higher incidence of epileptic phenomena in catatonic

schizophrenia than should be expected by chance alone and several workers have attempted to investigate the relationship[6, 19, 20, 24, 30]. These workers have reported cases in which ictal phenomena and E.E.G. changes of an epileptic nature tend to bear a fairly constant time-relationship to alterations of mental state and have included cases of Periodic Catatonia. Leiberman and Hoenig[20], using a photometrazol activating technique, made observations which tended to confirm those of other workers[19, 20] – that the lowered convulsive threshold occurred more commonly just prior to or during a remission. However, they felt that it might be found to be more directly related to some phase of the nitrogen curve in cases of Periodic Catatonia and would, therefore, not necessarily coincide with remission in all cases. In the case of Mr. K. S. (Figure 1), available data would suggest that the first three seizures may have occurred in phases of nitrogen retention – during remissions. It is difficult to know (in the light of the relative crudeness of measurement and only minor reduction of N.P.N. values) whether, despite administration of relatively high dosage of dessicated thyroid, a retention of nitrogen occurred during the latter part of the disturbed episode of November, 1955, when the last seizure was observed.

Summary: A description of Periodic Catatonia is offered stressing its relatively well-defined nature and the unique opportunity for controlled investigation that it presents. A case is described and discussion is offered of findings, hypotheses and therapy described in the literature. Discussion is particularly devoted to the investigation of the role of the thyroid and treatment with thyroid substances in this disorder. Spontaneous seizures were observed in the case described. Comment is made upon these (ictal) phenomena and E.E.G. changes that may occur in cases of Periodic Catatonia and may bear a fairly constant relationship to other phasic alterations (possibly of nitrogen balance) in this illness.

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Résumé

Il est question d'un type de schizophrénie appelé "catatonie périodique" et l'on souligne sa nature relativement bien déterminée et la belle occasion qu'elle offre d'une investigation contrôlée. Les investigations de Gjessings ont été les plus importantes qui aient été poursuivies au sujet de cette affection, et il a constaté un déplacement d'un état soutenu et surtout vagotonique avec un métabolisme basal anormalement faible dans les phases de rémission jusqu'à un état de sympathicotonie et un métabolisme basal élevé dans les états de trouble à répétitions presque régulières (excitation catatonique ou stupeur). Il a aussi décrit une variation cyclique dans le niveau azoté de l'organisme — cycle complet qui paraît avoir la même durée que le cycle représenté par des phases successives de trouble et de rémission, bien qu'elle ne s'y rattache pas d'une manière qui soit identique pour tous les cas. On décrit le cas d'un jeune homme de 24 ans qui ne réagissait pas aux méthodes conventionnelles de physiothérapie mais qui a

réagi au traitement exposé par Gjessings et qui consiste essentiellement dans l'administration de doses rapidement croissantes de thyroxine, par voie parentérale, suivies de doses d'entretien suffisant, de thyroïde desséchée, afin de maintenir le métabolisme basal à une valeur normale élevée. Les études sur l'ingestion d'oide radioactif qui ont compris des appréciations effectuées après l'administration d'hormone thyrotrope n'ont révélé aucun indice de trouble thyroïdien dans le présent cas. L'article expose les constatations, les hypothèses et la thérapie décrites dans la littérature, et mentionne particulièrement les études poursuivies au *Toronto Psychiatric Hospital* en matière d'endocrinologie et autres disciplines. On commente les phénomènes "ictaux" et les altérations électro-encéphalographiques pouvant survenir au cours de la catatonie périodique (et qui se sont produites dans le cas décrit) et se rattacher à d'autres altérations organiques (peut-être de l'équilibre azoté) dans cette maladie.

Editorial

MEANING OF THE M'NAGHTEN RULES: THE McRUER REPORT

Until the publication of the report of the Royal Commission on the law of insanity as a defence in criminal cases (the McRuer report), it is likely that most lawyers and doctors believed the law of Canada to be the same as the law of England. The McRuer report asserts that this is not correct. According to the Royal Commission, (page 8),

> "The rules laid down by the judges in England in answer to the question submitted to them arising out of the M'Naghten case form a historical background to the Canadian law, but neither the answers propounded nor the jurisprudence found on them in England constitutes the Canadian law."

In Canada, the rules are contained in section 16 of the Criminal Code which reads as follows,

> "16. (1) No person shall be convicted of an offence in respect of an act or omission on his part while he was insane.
>
> (2) For the purposes of this section a person is insane when he is in a state of natural imbecility or has disease of the mind to an extent that renders him incapable of appreciating the nature and quality of an act or omission or of knowing that an act or omission is wrong.
>
> (3) A person who has specific delusions, but is in other respects sane, shall not be acquitted on the ground of insanity unless the delusions caused him to believe in the existence of a state of things that, if it existed, would have justified or excused his act or omission.
>
> (4) Every one shall, until the contrary is proved, be presumed to be and to have been sane."

The Commission asserts that section 16 of the Code is subject to the Interpretation Act which provides for a . . . "fair, large and liberal construction and interpretation . . ."

The Commission has examined carefully the meaning of the words "incapable of appreciating the nature and quality of an act." In the M'Naghten rules the comparable phrase is "not to know the nature and quality of the act."

The distinction between mere knowledge and appreciation of the nature and quality of the act is emphasized. The test in Canadian law is stated in these words, (page 13),

> "The true test necessarily is, was the accused person at the very time of the offence – not before or after, but at the moment of the offence – by reason of disease of the mind, unable fully to appreciate not only the nature of the act, but the natural consequences that would flow from it. In other words, was the accused person, by reason of disease of the mind, deprived of the mental capacity to foresee and measure the consequences of the act?"

The importance of the distinction between mere knowledge and appreciation will be apparent to any psychiatrist who has testified in a criminal case. It should lead to the acquittal of a number of accused persons who would have been convicted under the more limited rule laid down in the M'Naghten rules.

The Commission discusses also the meaning of "wrong" in section 16 of the Code and asserts (page 13),

"Applying the provisions of the Interpretation Act, the word "wrong" must be given a broad meaning. We think it means wrong not only in the legal sense but something that would be condemned in the eyes of mankind."

The Commission suggests that a proper instruction to a jury should be along the following lines, (page 13),

"If you find on a mere preponderance of probability based on the evidence taken as a whole the accused was labouring under natural imbecility or disease of the mind to such an extent as to render him incapable of foreseeing and measuring the consequences of his act or of estimating aright or perceiving the full force of his act, you should find him not guilty on account of insanity; or if on a mere preponderance of probability based on the evidence taken as a whole you come to the conclusion that the accused was labouring under natural imbecility or disease of the mind to such an extent that he was incapable of knowing that the act was wrong (and by that I do not mean merely legally wrong, but wrong in the sense that it was something he ought not to do and for which he would be condemned in the eyes of his fellow men), you should find him not guilty on account of insanity."

Two of the commissioners dissented from some of the recommendations in the report. The report recommended no change in section 16(1)(2) of the Code.

The dissenters recommended repeal of section 16(1)(2), to be replaced by, (page 49),

"No person shall be convicted of an offence by reason of an act or omission on his part done or omitted while he is mentally deficient or has disease of the mind if such act or omission is the product of such deficiency or disease of the mind."

The writer was the chairman of the committee appointed by the Canadian Psychiatric Association to present a brief to the Royal Commission. Participation in the work of the committee as well as active participation in court cases has led to the formation of some beliefs of my own: on this account my review of the Commission's report cannot be wholly objective. It is certainly my belief that, if the interpretation of section 16 of the Criminal Code laid down by the Royal Commission is adopted and applied by the judiciary of Canada, the results would be regarded as satisfactory by the great majority of psychiatrists.

Another concept which was dealt with by the Commission led to a different conclusion by the two dissenters. The Commission recommended, (page 46),

"The law of diminished responsibility should not be adopted in Canada."

The dissenters stated, (page 49),

"With regard to conclusion 11 of Chapter XVII of the Report, we believe that the evidence shows that there are degrees of mental deficiency or mental illness not sufficient to absolve persons from all responsibility for criminal offences but sufficient nevertheless to make such persons not fully accountable for their actions. We recommend that section 16 be amended to provide for the operation of the doctrine of diminished responsibility, as practised in Scotland, in cases where there is evidence of mental deficiency or disease of the mind falling short of the full defence of insanity, whether section 16 (2) is retained, amended or replaced by a new criterion."

There is an interesting comment in this subject in the Canadian Bar Review[1]. Professor Mewett discusses the recent Homicide Act of Great Britain. Part of his article deals with section (1)(2), which reads as follows,

[1]1957 C.B.R. p. 958.

"(1) Where a person kills or is a party to the killing of another, he shall not be convicted of murder if he was suffering from such abnormality of mind (whether arising from a condition of arrested or retarded development of mind or any inherent causes or induced by disease or injury) as substantially impaired his mental responsibility for his acts and omissions in doing or being a party to the killing.

(2) On a charge of murder, it shall be for the defence to prove that the person charged is by virtue of this section not liable to be convicted of murder."

The M'Naghten rules are still the test in English courts but the foregoing is an alternative defence. It imports into English law the defence of diminished responsibility advocated by the two dissenters of the Canadian Royal Commission.

The Commission agreed with some of the suggestions put forward by the Canadian Psychiatric Association. The report agrees that section 16(3) should be deleted. It reads as follows, –

"(3) A person who has specific delusions, but is in other respects sane, shall not be acquitted on the ground of insanity unless the delusions caused him to believe in the existence of a state of things that, if it existed, would have justified or excused his act or omission."

The Association recommended changes in terminology, in particular, substitution of "mentally ill" and "mental deficiency" for "insane" and "natural imbecility." The Commission went only so far, (page 46),

"No sufficient case has been made out for changes in terminology in the statute law, which has been the subject of jurisprudence for many years, but if section 16 is to be revised the words "mentally defective" might be substituted for the words "in a state of natural imbecility."

The report is a landmark in the Canadian law of insanity as a defence in criminal cases. It remains for Parliament to determine what legislative changes will be enacted and for judges to decide whether the interpretation of the Criminal Code contained in the report of the Royal Commission is an accurate statement of the law.

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REPORT OF THE COMMITTEE ON EDUCATION—CPA

"At a recent meeting of the Board of Directors, Can. Psych. Assoc., the following recommendations were considered and accepted. These are to come before the general meeting to be held in Halifax on June 20 and 21, 1958 with the recommendation from the Board of Directors that they be adopted by the Association. In order that they may be discussed fully, they are published in this issue. The Chairman of the Committee, Dr. Robert O. Jones, 212 Robie Street, Halifax, Nova Scotia would welcome any expression of opinion regarding these recommendations and such comments should be sent directly to him. If these recommendations are approved by the Annual Meeting, they will be forwarded to the Royal College of Physicians and Surgeons of Canada with the recommendation that they be incorporated into the Royal College requirements."

Certification Examination in Psychiatry

1. An approved general interneship of at least one year.

2. Four years of graduate training in addition to the general interneship. This period must include:

(a) Two years approved resident training in psychiatry with the resident participating in the organized training program of a University Department of Psychiatry.

During this period there would be:

1. Experience on the psychiatric service of a general hospital.
2. Experience on an Outpatient Clinic dealing with community problems.
3. Experience in child guidance, in psychosomatic medicine, and on a neurological service.
4. Other settings approved by the university to meet special needs and which permit participation in the university teaching program.

During this intensive training period there should be contact with other medical disciplines and with the basic specialties in psychiatry, neurophysiology, psychology, social work, sociology, etc. Individual supervision of psychotherapy should make up a very considerable part of this teaching experience. Training should be so arranged that resident-teacher contact and resident-patient contact goes on over a prolonged period and should not be repeatedly broken. These years should be considered primarily teaching years and service considerations should be secondary during this time. Definite teaching hours should be set aside, and the resident's case load must be small enough to allow him to participate in teaching sessions, to read, and to integrate his experiences.

(b) Two years of training which must include at least a six-month period (and preferably one year) in a hospital providing an opportunity for the study of the comprehensive care of psychotic patients for a sufficiently long period to permit the resident to observe the natural course of the illness and its treatment. During such time the resident will be trained in the techniques, understanding, and proper utilization of long-term methods of therapy including coma insulin, drug therapy, occupational therapy, milieu therapy, group dynamics, activity therapy, and the rehabilitation process. In addition an opportunity should be given for training in medical-legal problems peculiar to this type of institution.

(c) One year of this time (b) may be selected from the following:

1. A further period of approved resident training as under (a).
2. A further period in the setting already described under (b).
3. A year in the full time study of a related basic science; such as, Neuroanatomy, Neurophysiology, Psychology, or Sociology in a Department approved by the University concerned.
4. Six months of approved full-time study of a basic science and six month of approved resident training in Internal Medicine, Paediatrics, or other branches of medical practice related to Psychiatry.
5. One year in an approved course of study and training at a hospital or University center in Canada or abroad approved by the University concerned.
6. A period in a psychiatric specialty; for example, Child Psychiatry, Research, Community Psychiatry, etc.

During all four years the candidate should be registered in a training course of the University of his choice – such University assuming responsibility for the standards of training in the area concerned.

Approval of Hospitals by the Royal College of Psychiatric Training

In the Committee's report of June 21, 1957, the present chaotic state of hospital approval in Psychiatry was pointed out. Nothing has been done as yet to make this situation any better and it appears to the Committee that it grows more confused all the time. The committee would make the same recommendations to the Board of Directors that they made of the June report of 1957. It is suggested that it be formally laid down that institutions seeking approval for training of candidates for Certification in Psychiatry be informed that an approach should be made by the institution concerned to the approving university in any particular area rather than directly to the College.

If the University feels that the Institution making such an application can be incorporated into the university training scheme, such judgement being based solely on the merits of the hospital concerned, then the institution's application accompanied by a supporting note from the university should be forwarded for action to the Royal College Committee. In the event of disagreement by either the applying hospital or the supervising university, either party has the right to appeal to the appropriate body of the Royal College of Physicians and Surgeons in which is vested final authority. It is suggested that a statement of this kind appear in the Royal College regulations stating that the approval for all institutions will be automatically revoked on July 1, 1959. Institutions desiring to train residents in psychiatry would thus have an opportunity to submit their scheme to the university department concerned and gain approval. Thus, finally there would be some order in the Canadian training scheme."

Book Review

"A GUIDE FOR PSYCHIATRIC AIDES"

By CHARLOTTE R. RODEMAN, R.N., B.S., M. Ed.

Published by the MacMillan Company

This is rather a tragic little book. The Author starts with a flourish by pointing out the importance of the Psychiatric Aide as a member of the Psychiatric team which she likens to a football team, each member having his own contribution to make under the guidance of the Captain. From here she goes on to describe the Aide's duties, to be the eyes and ears of the Doctor and Nurse, to prevent suicide, homicide, elopements etc. The patient has difficulty in relating to other people but it is the adjunctive therapists who must do something about this. The Aide is to be permissive "to permit the patient to feel that he may act and speak freely as long as he does not harm himself or others" and yet in the Aide, and I quote "a certain amount of fear is desirable" "It will help you to obey safety rules and regulations". The Aide must not discuss or talk about the following topics — other personnel; the patients personal problems; religion; his illness or reasons for hospitalization. This would change "a friendly relationship to a familiar one".

How can an Aide be permissive if he is both afraid and under the quoted limitations? Is it any wonder that Aides are afraid of hurting their patients, "Bear in mind however, that whereas the patients' thinking may be impaired and their behaviour may be governed by delusions, hallucinations and fears, you have the advantage of being in full possession of your faculties . . ." Is the Aide in competition with the patient?

One is left with the conclusion that the Aide is seen as a servant or pawn of the Nurse and Doctor, expected to do as he is told in an environment surrounded by "dont's", a far cry from the role of a member of a team.

In conclusion, apart from the chapters on physical nursing care, this book has little to recommend itself as a guide in the training of modern psychiatric ward care personnel whether they have the title of Nurse or Aide.

The basic problem of this book is the obvious lack of a consistent theoretical framework of reference.

I.L.W.C.

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Medical Director

EFFECT OF REPEATED VERBAL STIMULATION UPON A FLEXOR-EXTENSOR RELATIONSHIP*

D. Ewen Cameron and Robert B. Malmo[1,2]

The present study is an extension of the work of one of us (D.E.C.) (2, 3, 4) who has been investigating the effects of repeated verbal stimulation upon the behavior of psychiatric patients under treatment. From clinical observations it appears that transitory personality changes (e.g. increased assertiveness) may occur in a patient who listens to a statement (e.g. that he will become more assertive) presented to him through a speaker installed in his room. Such observations raised certain questions concerning the range of phenomena which could be affected by verbal stimulation, excluding hypnosis.

One question which occurred to us was whether repeated verbal stimulation would have any measurable effect upon physiological function. In addition to our interest in the question of the effect of verbal stimulation upon bodily function, we considered that the possibilities of objective measurement afforded by the physiological methods might prove a useful (though indirect) check on the clinical observations. Therefore, it seemed an excellent opportunity – in those patients who were undergoing repeated verbal stimulation for therapeutic purposes – to devote part of the day to procedures designed to provide an answer to the following question: Can repeated verbal stimulation produce an objectively measurable effect upon a physiological state? The purpose of the present paper is to describe an exploratory investigation of this question. As the physiological state to study we chose the reciprocal relationship between extensor and flexor tension in the muscles of the upper arm. Although patients whom we studied with physiological methods, also, of course, underwent therapeutic verbal stimulation, we shall confine the present report to physiological data.

Procedure

Subjects

Four female subjects, all psychiatric patients on the service of one of us (D.E.C.), were employed in the present experiment. Age for each patient was as follows: C.S., 32, M.P., 37, A.W., 56, and C.L., 35. All four patients were chronic psychoneurotics whose cooperation in the laboratory was satisfactory for accurate measurement of muscle tension, in all instances.

Repeated verbal stimulation

General considerations. Although space does not permit full exposition of the theoretical notions underlying the procedures designed to increase the effectiveness of repeated verbal stimulation in this program of investigation (2, 3, 4), the ones chiefly relied on, and the underlying rationale in each case, are briefly sketched as follows: (a) Intensive electroshock is administered prior to verbal stimulation in most cases on the hypothesis that the effectiveness of the verbal stimulation may be increased following disruption of ongoing patterns, of behaviour. (b) Although it is not possible to apply the conditions as rigorously as in the case of the McGill experiments with normal subjects, when feasible verbal stimulation is carried out under conditions of partial sensory deprivation, using the McGill technique (1). The purpose here is to limit, as far as possible, inter-

*This study was supported in part by a grant from the Society for the Investigation of Human Ecology.

[1]We wish to acknowledge with gratitude the assistance of Mr. L. Rubenstein who prepared the sound tapes and the mechanisms for playing them to the patients.

[2]Allan Memorial Institute of Psychiatry, and McGill University, Montreal, Canada.

fering effects of environmental stimulation, and thereby to increase the effectiveness of the voice heard through the speakers. (c) An attempt is made to counteract adaptation to stimulation, by introducing variations into the way the statement is presented to the patient. In preparing the tape different tones of voice and shifts in emphasis from one word to another are intentionally introduced. In addition, novel effects are produced by arranging a multiplicity of speakers in the room so that the voice appears to change in intensity from minute to minute and to come from different locations.

In the present investigation, six hours each day were devoted to verbal stimulation for the purpose of changing behavior patterns of the individual, and six hours to the statement concerning extension of the arm which, as mentioned, is the sole concern of the present paper.

Repeated verbal stimulation in the present study. The following statement was repeatedly presented to all subjects: "Your right arm is straightening out. Your right arm feels as if you are reaching out for something. Your right arm feels stiff at the elbow as it does when you are stretching." A tape was prepared with this statement made in a very clear, forceful voice which varied in tone and accentuation as the same statement was repeated in several different ways (the words were always the same, but the intonations differed). This tape was then played over and over again to the subject in her own room for approximately six hours per day. The number of hours of presentation were approximately as follows: C.S., 18, M.P., 90, A.W., 88, and C.L., 24.

Subject M.P. was sedated with various drugs which kept her in a partially somnolent state for a considerable portion of the time, although she heard the tape under conditions of waking between periods of sleep. In three of the four cases, the tape was played through the speakers in the patient's room. A.W. received her stimulation in a different setting: a speaker underneath her pillow stimulated her with the statement concerning her arm approximately six hours per day.

Electromyographic recording procedure

The subject was seated in a comfortable chair with the right arm placed in a comfortable position on a pillow, resting in her lap. The right hand rested palm down on the pillow, two inches from a fixed attachment to the arm of the chair. The elbow was positioned with reference to a sponge-rubber attachment, so that the angle which the subject's arm made with the arm of the chair was approximately 75 degrees. Extreme caution was exercised in placing the arm always in the same position. The subject was asked to relax as much as possible, and was instructed not to move nor talk during the recording.

Standard cellulose leads were employed for recording electromyograms (EMGs) from forehead, biceps, and triceps muscles (5). The forehead electrodes were placed chiefly to distract the subject's attention from focusing entirely on the arm, and the results from such recording will not be considered in this paper.

The first step in the experiment was that of making simultaneous recordings from biceps and triceps, before the application of repeated verbal stimulation. The subject was asked to relax as much as possible, and after muscle tension appeared to reach a plateau of relaxation, a recording, approximately ten minutes in duration, was taken. The data to be reported were those from the part of the electromyographic record showing the highest degree of relaxation for each particular patient.

Prestimulation tracings were taken from all patients. No tracings were

TABLE 1: EFFECT OF REPEATED VERBAL STIMULATION ON FLEXOR-EXTENSOR DOMINANCE

Subject	Date 1956	Mean[a]		Grand Mean		Dif.	Prob.
		Prestim.	Poststim.	Prestim.	Poststim.		
C.S.	4 Apr.	2.27					
	24 "	11.32					
	27 "		−3.19				
	1 May		2.60				
	4 "		−2.93				
	18 "		−0.65	9.21	−1.44	10.65	<.001
M.P.	18 May	−0.68					
	20 June		−0.75				
	29 "		−4.67				
	11 July		0.32	−0.68	−1.58	0.90	<.001
A.W.	30 May	6.46					
	21 June		−53.62				
	3 July		23.12				
	11 "		−3.58	6.46	−12.06	18.52	<.001
C.L.	24 July	2.14					
	27 "	9.85					
	3 Aug.		0.16	5.42	0.16	5.26	<.001

[a]Biceps tension in microvolts minus triceps tension in microvolts. Note that minus values indicate extensor dominance.

taken during the period that the patients were undergoing repeated verbal stimulation. Patients were brought down to the laboratory for the first post-stimulation tracing very soon after the final termination of stimulation. For example, in the case of C.S., prestimulation recording was made on 24 April, stimulations were presented on 25, 26, and 27 April, and the first post-stimulation recording was made on the afternoon of 27 April, following termination of stimulation at noon.

Every possible attempt was made to avoid having the patient make any association between the verbal stimulation and the tracings which we made. We believe that we were successful in concealing this association, inasmuch as no patient at any time during the experiment ever made any remarks to those taking the EMGs that would indicate that she had made the connection between the verbal stimulations and these laboratory procedures.

Treatment of data

The section of tracing selected for measurement in each instance was approximately ten minutes in duration, and from the part of the session when the subject was most relaxed. An integrator recorder was used to simplify measurement. Primary tracings were taken throughout for purposes of monitoring the integrated record. For the first three subjects an integration rate of 2-per sec. was used, and for the fourth subject a rate of one per 4-sec. Integrator deflections were measured in pairs. That is, the deflection from biceps, and the deflection directly opposite from it, that for triceps, constituted a pair of measurements of muscle tension, recorded simultaneously. The difference between the deflections in each pair (converted to microvolts from our calibrations) constituted our primary data. The subtraction was always made in the direction of biceps minus triceps, so that flexor (biceps) dominance was indicated by positive values, and extensor dominance was indicated by minus values. The mean values in Table I were obtained in this manner.

Results

Figure 1 illustrates (with primary tracings) the reversal in direction of flexor-extensor dominance which was observed in the present experiment, when we compared tracings which were obtained before and after repeated verbal stimulation. Table 1 summarizes the data from the experiment. First note the combined data on the right side of the table. Observe that in each case, values following repeated verbal stimulation showed a significant increase in the direction of extensor dominance. Probabilities are based on critical ratios.

On the left side of the table, a more detailed breakdown of the data indicates that in all four cases, the first poststimulation recordings showed a change, from the prestimulation condition, in the direction of greater extensor tension.

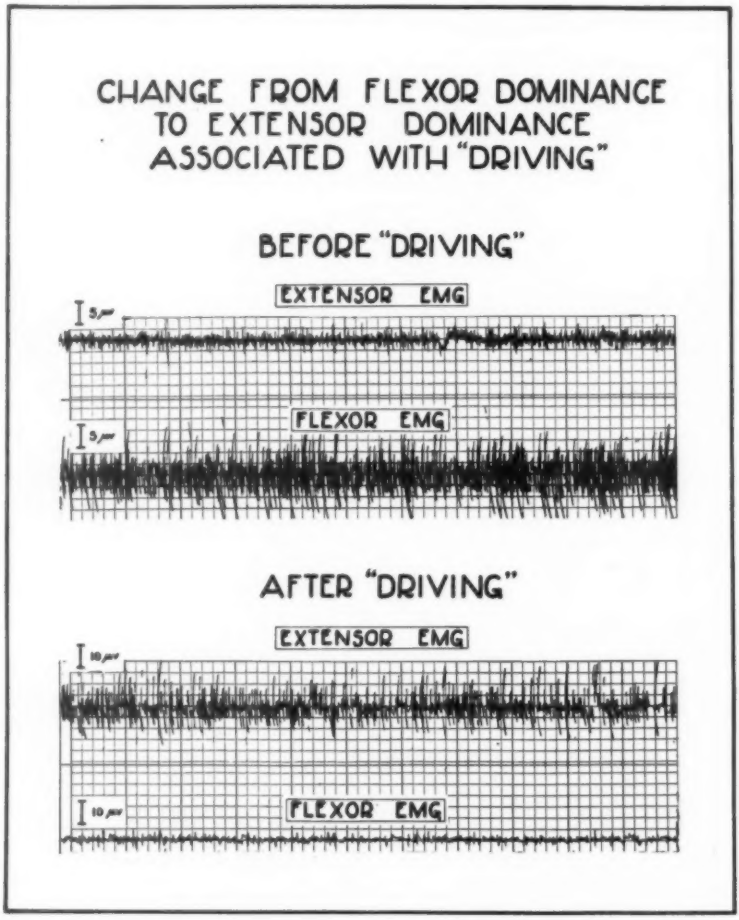

Fig. 1. Comparison of flexor-extensor relationship before and after repeated verbal stimulation in C.S. Flexor and extensor muscles were biceps and triceps of the right arm. Records were taken under conditions of relaxation with the arm comfortably postured in standard position. The section of tracings chosen for illustration represents approximately 11 sec. of recording. "Driving" is a brief designation for repeated verbal stimulation.

Of the three cases with several poststimulation recordings, two showed the highest negative value (i.e. extensor dominance) on the first recording, and the third patient (M.P.) showed minus values on the first and second post-stimulation recordings and a positive value on the last. It is, of course, difficult to determine the duration of the effects of repeated verbal stimulation, but from the data of C.S., particularly, it seems reasonable to suggest that the effects may endure up to three weeks.

It may be of interest to note that effect of electroconvulsive therapy appears to be in the direction of increasing flexor dominance, as we have measured it. C.S. and C.L. whose prestimulation recordings were taken at different stages of ECT showed a significant rise in the positive values (see Table 1) associated with this treatment.

Discussion

Present results suggest that repeated verbal stimulation may be effective in altering a flexor-extensor relationship. It is important to consider whether present results may have been produced by our subjects' consciously tensing their triceps muscles during the recording. From our observations, this explanation of our findings appears very unlikely. As mentioned, no subject seemed to associate our recordings with the verbal stimulation which she had been receiving. One of us (R.B.M.) sat with the patient through all sessions, and never observed any sign of tension in the arm which rested quietly in her lap. Very complete relaxation was achieved, with all patients showing extremely low microvolt readings (down to 1.5-2.0 microvolts, at times). In one case, at least, it seems reasonable to entirely rule out the possibility of voluntary effort. C.S. in her first poststimulation session was considerably regressed from a massive course of ECT. She would not respond at all to questions, and about the only communication possible was through a smile, which she would return in a very infantile way. We can be very certain that this patient did not tense her arm to produce a record of extensor dominance.

From present findings, it appears reasonable to conclude that prior verbal stimulation may be effective in changing the reciprocal relationship between flexor tension and extensor tension in an arm at rest, in the absence of any voluntary effort on the part of the subject at the time of electromyographic recording. It would be very hazardous at the present time to guess how this change might occur. However, present findings are encouraging with respect to further attempts to objectively measure the effectiveness of repeated verbal stimulation upon physiological function. Moreover, the suggestion from present results that physiological states, not readily accessible to conscious voluntary control, may be altered by verbal means, raises some provocative questions concerning the field of psychosomatic medicine.

Summary

Previous work with psychiatric patients has indicated that repeated verbal stimulation, without induction of hypnotic trance, may produce definite — though transitory — personality changes. The purpose of the present investigation was to determine whether such repeated verbal stimulation would affect an objectively measurable physiological state.

Accordingly, we chose to study flexor-extensor (biceps-triceps) dominance of the right upper arm. Several means designed to increase the effectiveness of repeated verbal stimulation were employed. Prior to verbal stimulation, electromyographic recordings were carried out in order to determine the amount and direction of dominance in the flexor-extensor relationship. In three of four

patients, the prestimulation recordings revealed flexor dominance with only slight extensor dominance in the fourth patient. In all four cases a recorded statement to the effect that the right arm was extending was played repeatedly to the patient.

Results showed that in all four cases there was a statistically significant shift in the direction of greater extensor dominance.

Evidence was cited favoring the conclusion that the positive effects of repeated verbal stimulation were not simply produced by voluntary muscular contraction or posturing on the part of the patients. The relevance of present findings to problems in the field of psychosomatic medicine is suggested.

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Résumé

L'expérience antérieure démontre que, chez les patients psychiatriques, des modifications certaines de la personalité, bien que transitoires, peuvent être produites par la stimulation verbale répétée, sans induire une transe hypnotique. Le but de la présente recherche était de déterminer si une telle stimulation verbale répétée affecterait un état physiologique objectivement dosable.

A cet effet, nous avons choisi pour notre étude la prédominance fléchisseur sur extenseur (biceps-triceps) au bras droit. Divers moyens d'augmenter l'efficacité de la stimulation répétée furent employés. Avant la stimulation verbale, des enregistrements électromyographiques ont été faits pour déterminer l'importance et la direction de la dite prédominance dans la relation fléchisseur-extenseur. Chez trois sur quatre des patients, les enregistrements précédant la stimulation ont révélé la prédominance du groupe fléchisseur, avec légère prédominance des extenseurs chez le quatrieme sujet. Dans les quatre cas un énoncé sur magnétophone disant que le bras droit devenait en extension a été répété au patient.

Les résultats ont démontré dans les quatre cas la prédominance des extenseurs, de signification statistique.

Le présent travail favorise la conclusion que les effets positifs de la stimulation verbale répétée n'étaient pas dus simplement à la contraction volontaire ou à la posture. L'apport des présents résultats semble pertinent en relation aux problèmes de médecine psychosomatique.

SPECIFIC IMPOTENCE IN THE MARRIED MALE

By MARVIN WELLMAN, A/Surg. Captain, R.C.N.[1]

Today it is almost as commonplace for a man to be concerned about the functioning of his sexual organs as it was during the first part of the century for a man to be concerned about the functioning of his bowels. Sexual impotence, or to be more precise penile impotence, is uncommon in the consulting room, but it is probable that for every man who seeks medical assistance for this condition there are many who do nothing about it. The most common form of this dysfunction would seem to be a specific impotence, that is, a man is impotent in relation to a particular woman, usually his wife.

Specific impotence has social significance because it may play an important part in the disruption of the home. The wife is apt to conclude that her husband is no longer interested in her or that he is having an affair with some other woman. The husband may conclude that he has lost his love for his wife and forget that the satisfactions from the division of labour and the non-genital emotional gratifications of marriage are a valuable part of marriage. Minor misunderstandings under these circumstances frequently give rise to disproportionate angers and resentments. In a state of sexual deprivation, usually accentuated by the erotic stimulation resulting from living in close association with his wife, the man tends to develop a ready genital response to casual association with other women. He may consider that he is in love with any pleasing women who looks on him with favour.

Sexual impotence is usually considered to be a symptom. As a chief complaint, it has the justifiable reputation of being a difficult therapeutic problem. The doubtful prognosis, and the difficulty in obtaining treatment by those techniques which claim the best results as well as the cost in time and money of those treatments, encouraged this attempt to study the problem from a different basic theory and on that theory to attempt building a therapeutic regimen.

Neurophysiological theory provides a reasonable formulation of a dynamic event though it makes no reference to the subjective facts. A physiological interpretation is not considered to imply that subjective experiences are less biological than physiological forms of behaviour, or that there is any necessary conflict between a psychological approach and a physiological approach to this or to any other medical problem. The two approaches would seem to be complementary and the processes studied by them so closely allied that it is impossible in man for either to act independently.

Occasionally an episode of transient impotence has been revealed to the author long after it has disappeared. Some of the patients reporting these episodes stated that genital activity was greater after recovery than it had been before the onset of the impotence. In one instance this information was elicited when recovery had followed intensive therapy, and in other instances when it seemed to have occurred spontaneously. The increased sexual activity had been interpreted as a part of the recovery process, but on reconsideration it was apparent that it might also be interpreted as a cause of the recovery.

Penile impotence in relation to one particular woman could be interpreted as a conditional inhibition of a conditional positive sexual response. In these patients the stimulation from the physical presence of the wife, from chance physical contacts with her and from fantasy, was regularly associated with

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sexual rejection and deprivation. The resulting conditional inhibition was grasped as a ready-made mechanism by which intrapsychic conflicts, too weak to directly gain expression, could express themselves. In this way hostility towards the wife, or guilt because of symbolic incest where a beloved wife was representing too closely a beloved mother, might well reinforce the conditional inhibition once the latter had developed. Impotence, considered as a conditional inhibition, ceases to be a symptom pointing to something else and itself becomes a disturbance in the pattern of married behaviour.

Genital impotence was diagnosed on the reported inability to achieve intromission with an ensuing ejaculation during the previous four months in spite of occasional or frequent opportunities for such activity. It was considered to be specific if this disability manifested itself only in relation to the wife and if there were spontaneous morning erections occurring at least once weekly when there was no extramartial sexual activity. It was considered that this diagnosis was given further support if a healthy genital response accompanied casual association with other women or occurred when making love to them. Treatment was aimed at restoration of the simplest pattern of sexual activity closely paralleling other excretory activity. It was hoped that from this achievement a married couple could ascend together towards more complex forms of gratification if it were considered mutually desirable.

Eighteen patients, each of whom was diagnosed as suffering from specific penile impotence, were first seen between September 1, 1945 and May 1, 1953. Eleven patients, out of another group of sixteen who had been seen between 1942 and 1945 and similarly diagnosed, were again interviewed during the last three months of 1945. Of the twenty-nine patients, six sought out the psychiatrist without any appointment, and the remaining twenty-three patients were referred by the medical officers to whom they had reported complaints which they considered to be less humiliating than impotence.

Four interviews were planned for each patient. In the first, which was to take place immediately after it was decided that the patient was a suitable subject, the therapeutic routine was to be explained and a second appointment made. This was to be two or three days after the first appointment was intended to give the patient an opportunity to discuss the treatment routine with his wife. A third interview, one month later, was aimed at clearing up any questions which might have arisen. At a fourth planned interview, two years later, any change in behaviour was to be determined and assessed.

Of the twenty-nine patients, three were considered to be unsuitable as subjects of a therapeutic test because no one of them wished to resume relationships with his wife. One was a man who hoped to discover a medical reason for divorce, the second was bitter as a result of persistent disharmony and repeated infidelities and the third was continuing to live with his wife only because of the children. The remaining twenty-six patients were informed that the body learns things in about the same way one learns the multiplication table; if one goes over it often enough, two sixes become twelve without even thinking. A not uncommon experience of childhood was somewhat closer to the immediate problem; a youngster who two or three times eats so much of his favourite dish that he is nauseated is apt to become nauseated again at the very sight of that particular delicacy. Similarly, when one particular woman rejects sexual advances many times the body may sometimes learn that it will not be satisfied by that particular woman. Some men experience sexual rejection more frequently than others without interference with potency. It was suggested that this depended on the gratification he received from his ap-

preciation of being needed, the maintaining of his personal standard of manliness and the fulfillment of his sense of duty, and undoubtedly a variety of other factors which were peculiar to the individual.

The problem which confronted the patient and his wife was the need to teach the body that sexual gratification could be obtained in the marriage bed. Coitus had to be spontaneous and unrelated to any feeling of acting to meet a demand or to come up to a standard. In a man the ability to copulate was not entirely under conscious control. Factors inside the body and related to the manner in which the body was put together had to be in agreement with the conscious desire. The body learned slowly and it would take some time and considerable care to enable the body to unlearn what it had learned. Once the body relearned a coital pattern with the wife there must be no encouragement of any tendencies to behave again in an impotent manner.

Twelve of the patients were sleeping by themselves more frequently than with their wives. In three instances the wife had made the decision for this conduct following repeated sexual difficulties. Four couples seemed to have made arrangements for sleeping separately by unspoken agreement. Five of the patients slept by themselves because they were less restless than when sleeping with their wives. Patients were advised to resume sleeping with their wives because it was considered that unplanned and fortuitous tactile stimuli were important in the development of erotic sensations.

A general plan of conduct was outlined to each patient. He would have to assume deliberately and attempt to feel sincerely something of a casual attitude towards his sexual life. Coitus must not be considered a "problem". He would have to be persistently observant of erotic sensations or cavernous engorgement and this observation would have to be without any accompanying feeling of effort or stress, even with something approaching indifference. When erotic sensation or cavernous engorgement was observed he should make a casual effort to intensify his pleasure and satisfaction. If at any time before the onset of the impotence erotic fantasies had been a satisfactory accompaniment of erotic physical experiences there was no reason why the fantasies should not be resumed. Every awareness of erotic pleasure should not be a signal for an attempt at sexual intercourse, but it indicated that the pleasure which he was experiencing probably could be improved by fondling, exploratory advances and fantasy. Copulation should follow when it came naturally as the next step in the search for greater satisfaction. If the patient became aware that his amatory advances were strained and effortful they should cease.

He was told that his wife's personal pride, where it was related to her sexual life and her sexual inclinations at any particular moment, would have to give precedence to the demands of this recovery programme. Her co-operation must be given without reluctance or it would not be worth while giving at all. If the wife wished their mutual sexual life to be resumed satisfactorily she must accept the fact that the marriage bed was one place where she was not free to reject or demand because her husband's genital responses were, only in part, the result of conscious wish or desire.

It was suggested that the wife was probably expecting too much from the sexual aspects of her marriage in one way and not enough in another. Sexual gratification could not be expected to be a soul-searing experience all the time, but there was no reason why its lesser intensities should not be commonplace and regular. Orgastic excellence was not a criterion of marital warmth and gave little indication of the multiplicity of other gratifications to be found

in the marital relationship. The wife's part in the resumption of marital sexual relations was to accept and encourage her husband's advances whenever he made them. She was to be positive in her attitude consistently and to respond always to the sexual advances of her husband with amorous words and physical evidences of her affection.

This attitude and behaviour on the part of the wife was considered essential for a return of the reflexes associated with positive male sexuality. She should be prepared to expect nothing more than was offered and to ask for nothing more than was readily given. The only times when it would be safe to refuse the sexual advances of her husband were those times supported by tradition, the menstrual periods when coitus was aesthetically uninviting to many people, late pregnancy and early during the post partum period. The wife would not allow herself to be resentful if the result of any particular amorous interlude were not coitus nor if coitus did not bring orgastic experience to her. Resentment would be conveyed to her husband even without words and it would delay the reestablishment of normal sexual relationships.

The patient was informed that it was humanly impossible to make all the drastic changes in behaviour which were being recommended, but that it was necessary for these forms of behaviour to be accepted as goals.

Patients were not to interfere with the spontaneous progress of the sexual act until after the first year of the treatment routine. After this empirically selected period some control of the sexual act might be attempted experimentally although anything which, in any way, was felt to be a threat to gratification was to be discontinued. If the instructions were carried out they probably would develop to such an extent that any coital episode which had been unreasonably short would be followed by a second in a matter of less than twelve hours. The second episode would require a longer time and after a year could be extended with little effort. No birth control measures were to be carried out by the husband or to be considered as his responsibility.

During the interview in which the programme was outlined one of the patients stated that he could not go ahead with the routine and that he could not even discuss it with his wife because of the altercation which he knew it would initiate. The remaining twenty-five were told to talk over the matter with their wives and a further appointment was made.

When the patients returned after they had discussed the first interview with their wives, three reported that the wives were unwilling to attempt the treatment routine. These women believed that they had been free with their favours, and this was apparently true but they had been free with their favours under the circumstances and at the times dictated by themselves. Their graciousness had not often coincided with the periods of their husband's most active desires. Each of these three women independently suggested that her husband was trying to get things the easy way and that the doctor was trying to help him.

During the first three months two women revealed that they could neither accept the possibility of a pregnancy nor could they conscientiously make use of the birth control measures advised by their physicians. Another two decided that they could not go through with the programme for reasons which did not seem clear to the husbands but apparently involved what the wives felt to be an implied insult to themselves in being required to "submit" to the sexual whims of a man. Another decided that the advised programme would not help anyway and she "could not see things that way."

The patients who reported that either they or their wives did not wish to carry on whole-heartedly with the therapy routine were considered to be added controls for those under treatment. It was believed that the control group would at least offer some indication of the frequency of such events as spontaneous recovery. The entire group of twenty-nine subjects were divided into seventeen patients and twelve controls. It was possible to interview five of the controls and fifteen of the patients after a period of two years or later.

The age of the eldest of the twenty-one subjects who were followed for two years was 39 and the youngest 25, the median age was 29 years. The most recently married had been married nearly five years and the longest married had been married for seventeen years. The median period of marriage at the beginning of impotence was eight years and two months. When first seen by the author, sexual impotence had been present from four and a half months to forty-five months with a median duration of fifteen months.

The subjects of this study were considered to subscribe to ideals which were somewhat more puritanical than were generally held by others of their social group. They expressed opinions indicating that they esteemed their wives highly as individuals but, in spite of this, the description which they gave of them in each instance was strongly reminiscent of Dr. Iago Gladstone's "fixedly immature female".

During the second year following the first planned interview two of the control group had intercourse once, one had intercourse twice and one four times. Erection continued to be barely adequate for intromission. It was not possible to interview the fifth control until the 45th month after he had found it impossible to continue with the project. The pattern of behaviour had changed during the 23rd month. When he was interviewed effortless coitus was occurring twice weekly or more frequently except for the traditionally prescribed periods.

Among the patient group any improvement in sexual relations had been gradual, requiring between six months and a year for each couple to accustom themselves to a changed routine of sexual relations and some acceptance of different attitudes towards each other. Six of the fifteen who had attempted to follow the treatment routine were leading satisfactory sexual lives and reported intercourse, once, twice and occasionally three times a week. Each of them volunteered awareness of a lessened feeling of need to be on guard and a greater sense of ease with their wives than before beginning treatment. Each of the remaining nine patients had experienced some improvement in interpersonal relations with their wives. Six of them copulated more often than once a month, one of the six with considerable difficulty. Two copulated every month and on about half the occasions the sexual act was accomplished with difficulty. One patient with a frequency of once every two or three months reported that his potency was frequently adequate, but when it was not, he did not worry about it. These last three, in answer to questions, reported that they were getting along better with their wives and felt better about things in general than when first seen.

The fifteen patients and five controls, when they were interviewed two years or more after the project began, all reported that their family relations had improved. Six patients and one control were leading satisfactory sexual lives and were getting along well with their wives. The other nine patients did not seem to have achieved a more equable marital situation than the remaining four controls although their sexual activity was considerably greater.

DISCUSSION

The group reported in this paper includes all those married men first seen during the time reported whose chief complaint was specific genital impotence. It did not include patients in whom the impotence was a symptom of other readily recognizable clinical pictures such as depressions. A description of the mechanisms of the impotence from which the twenty-six suffered could be reasonably formulated in terms of a conditional inhibition. It is probable that the group was more highly selected than is obvious because when they were last interviewed there was no suggestion that any one patient or control expected his home to break up. This was in spite of the fact that even at this time not more than seven had reasonably satisfactory sexual lives.

Fifteen of the twenty-one patients had attempted to carry out a routine which was aimed at altering a conditional inhibition. The rather remarkable finding after two years was that the marital situation of the entire twenty-one couples had improved and that while the patient group was more active genitally there was little difference between the two groups when considered in relation to such things as the disappearance of resentments and the presence of warm positive feelings.

In practice it was found that an attempt to alter a conditional response was a complex process. The therapeutic situation had many facets in addition to the overt one in which the patient was instructed. By the time the husband was interviewed originally, both the husband and the wife had been subject to sexual deprivation and in all cases both seemed to have been aware of a threatened loss of the physical presence and emotional support of the other. The authoritative figure of the physician directing a plan of behaviour aimed at the relief of the sexual difficulty was not without its favourable influence, and the husband's tendencies to dominate were not only encouraged by the instructions regarding genital activity but were encouraged by the instructions being carried home by him. In the complex therapeutic situation which arose from these and other considerations the woman allowed herself to be dependent.

CONCLUSIONS

1. The recovery of potency seemed directly proportional to the emotional and physical receptivity assumed by the wives.

2. The study suggested that if couples wanted to get along with each other, the length of time during which they continued to live with each other was an important factor.

3. The possibility of giving assistance to an important proportion of married men who suffer from specific penile impotence by treating it as a conditional inhibition seems worthy of further investigation.

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Résumé

1) La disparition de l'impotence semble directement en rapport avec les capacités de réceptivité tant émotionnelles que physiques de l'épouse.

2) Notre étude suggère que lorsque les couples désirent s'entendre, la durée du temps passé ensemble est un facteur important.

3) La possibilité d'aider une proportion importante d'hommes mariés qui souffrent d'impotence fonctionnelle spécifique du pénis, en la considérant comme un problème d'inhibition conditionnée, mérite plus ample investigation.

L'auteur est reconnaissant à la Clinique Henry Phipps, de l'hôpital John Hopkins, à Baltimore, Maryland, de lui avoir permis d'utiliser les ressources de sa bibliothèque.

A CLINICAL TRIAL OF THE EPINEPHRINE-MECHOLYL TEST IN A MIXED GROUP OF PSYCHIATRIC PATIENTS*

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Numerous studies have demonstrated abnormalities of autonomic function in various psychoses (22). In general, most physiological findings have remained interesting observations since they have not shown correlation with either the clinical picture or the outcome of treatment. The outstanding exception to this statement is the Funkenstein test. It is based on the patient's blood pressure response to adrenalin and mecholyl. The results can be related closely to outcome, and less closely to the selection of patients for physical treatment (1-8). This communication reviews the available literature and reports our findings with this test in a group of 27 psychiatric patients consisting of six psychoneurotics, five acute schizophrenics and 16 chronic schizophrenics.

Funkenstein and his colleagues have classified the responses into six groups on the basis of a large series of tests in normal and emotionally ill people (Table I).

TABLE I: FUNKENSTEIN GROUPS BASED ON RESPONSE OF SYSTOLIC BLOOD PRESSURE

Group	Adrenalin (0.05 mgm. I.V.)	Mecholyl (10 mgm. I.M.)
I	rise in excess of 50 mm. Hg	slight fall with early rise above pre-injection level, without return to homeostasis within 25 min.
II–III*	rise in excess of 50 mm. Hg	moderate or slight fall, with or without slight rise, return to homeostasis within 25 min.
IV	rise in excess of 50 mm. Hg	moderate fall with marked compensatory delayed rise before establishment of homeostasis
V	rise of 50mm. Hg or less	fall with failure to reach pre-injection level within 25 min.
VI	rise in excess of 50 mm. Hg	fall with failure to reach pre-injection level within 25 min.
VII	all cases in which chill after Mecholyl prevented reliable blood pressure recording	

*The original differences between Groups II and III were not significant and the two groups were combined.

In addition to this objective method of classification, the patients were further identified on the basis of their subjective response and other manifestations as follows:

(a) Somatic manifestations but no subjective sensation of anxiety,
(b) The precipitation of anxiety by either or both agents,
(c) Where constant fear and anxiety associated with tremors is present, epinephrine increases these tremors, but mecholyl reduces all manifestations after 10 minutes,
(d) Chills occurring 11 to 23 min. after mecholyl.

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TABLE II: IMPROVEMENT FOLLOWING E.C.T.

Group	Rate of Recovery %
VI	89
VII	97
II–III	35
I, IV, V	about 10

Funkenstein considered his groups to be independent of clinical diagnosis but to correlate well with the response to therapy (Table II).

Patients that fell into Groups VI and VII were considered to have a favourable prognosis while those in Groups I to IV had a more uncertain future with present methods of treatment. If the patients fell into a favourable group but still experienced subjective anxiety after epinephrine, the improvement rate fell to 63%; in the unfavourable groups the presence of this anxiety did not markedly influence the prognosis. These patients sometimes improved with insulin and lost their anxiety to epinephrine (6). Alexander supports this conclusion but feels that combined convulsive-non-convulsive therapy, as well as insulin, may be successful in these cases (15). Funkenstein and his colleagues consider the following additional factors indicative of a favourable prognosis with E.C.T. (1, 4, 6, 7): (a) anxiety precipitated or diminished by mecholyl, (b) a high resting blood pressure that shows a marked fall of large area after mecholyl with a long time required to re-establish homeostasis.

Funkenstein and his colleagues (2) found that in a group of 115 cases the following proportions of various diagnostic categories fell into the favourable Groups VI and VII: schizophrenia 1/37, psychoneurosis 9/32, psychopathic personality 0/15, involutional psychosis 11/12, manic depressive - manic 3/4, controls 12/13. Other investigators state that clinical improvement following E.C.T., as well as other therapies, is more closely related to this "autonomic grouping" than to clinical diagnosis (14, 15, 16).

Schizophrenic patients in Group I did poorly on tests of abstract thinking, whereas those in Groups II-III, VI or VII showed no impairment (9, 10). Indeed, the greater the capacity for abstract thinking, the greater and more prolonged was the fall in blood pressure following mecholyl.

Funkenstein prepared a separate classification for patients with a systolic blood pressure above 140 mm. Hg. On the basis of their response to 10 mg. of mecholyl, he divided them into two groups: Group A, where the systolic pressure fell and remained below the base line for more than 25 minutes, Group B, where the systolic pressure fell but returned to pre-injection level within 25 minutes. In Group A, E.C.T. improved 39 out of 42 cases, but in Group B, only three out of 21. Funkenstein (8, 11, 12) has suggested that the elevated blood pressure is due to an increase in an epinephrine-like substance in Group A, and a nor-epinephrine-like substance in Group B. This is reminiscent of the studies of Hickham, Cargill and Golden (17) and Goldenberg, Pines, Baldwin, Greene and Rog (18): it has also been suggested that an increase in an epinephrine-like substance characterizes patients with a good prognosis

after lobotomy (19). In the hypertensive cases improvement was associated with a fall in resting blood pressure and a decreased response to mecholyl; the unimproved showed a small fall in resting blood pressure and an increased response to mecholyl.

METHOD

Six psychoneurotics who were to remain in hospital for two or three weeks and five acute and 16 chronic schizophrenics were tested. Of the chronic schizophrenics, two were mild and on an open ward; the others were on closed wards. Of the latter, all but two had been in hospital more than three years and all had received various forms of shock therapy. All were between the age of 18 and 45 years; two were females.

The tests were performed on three consecutive days according to the procedure of Funkenstein, Solomon and Greenblatt (5, 6). The patient was reassured and asked to report his feelings. Subjective anxiety was explored by direct questioning. Signs and symptoms of anxiety were tabulated using Cameron's Anxiety Chart (20).

Two hours after the last meal the patient lay quietly in bed for 30 minutes. Then, as soon as the blood pressure and pulse had been constant for five minutes, the tests were begun:

Day I — Physiological saline, 1 ml. I.V. in 1 sec. Systolic B.P. recorded every 15 seconds, beginning 30 seconds after the injection, until it reached pre-injection level and remained there for five minutes,

Day II — Epinephrine, 0.05 mg. in 0.5 ml. of physiological saline I.V. in 1 sec. Systolic B.P. recorded every 15 seconds, beginning 30 seconds after the injection, until it returned to pre-injection level and remained there five minutes,

Day III — Mecholyl, 10 mg. in 1 ml. of distilled water I.M., in 1 sec. In this test the systolic blood pressure was taken every 30 seconds for six minutes and then every minute for 19 minutes, a total observation period of 25 minutes. Atropine, grs. 1/100 in 1 ml. distilled water, was kept ready in a syringe (2, 13) but no untoward effects of mecholyl were encountered in this study.

The blood pressure changes during the test were classified independently by four observers. The clinical diagnosis, treatment and disposal of the patients were decided by the regular Psychiatric Conference of the hospital without knowledge of the results of these tests. A patient was considered "Improved" when he could return to one of the Armed Services, or could make an adequate adjustment in the community for an indeterminate period.

RESULTS

To facilitate comparison, our results and those of Funkenstein (2) and Geocaris and Kooiker (13) are shown in Table III.

Not one chronic schizophrenic patient showed responses falling into the favourable Groups VI and VII. Epinephrine precipitated anxiety in only one of these patients; mecholyl neither increased nor decreased anxiety in any.

Of the three acute schizophrenics in Group VII, two showed improvement on chlorpromazine and psychotherapy, and were discharged from hospital within nine weeks of their admission. The third improved after insulin coma therapy. Clinically, all three patients showed adequate affect. One experienced rather marked anxiety in response to epinephrine but this did not recur when he was retested after three weeks on chlorpromazine. The acute schizophrenic falling in Group I showed anxiety after both epinephrine and mecholyl but this

TABLE III: GROUPS

	Diagnosis	I	II–III	IV	V	VI	VII	
A	*Our Series* Chronic Schizophrenics – 16	1	8	5				2 could not be grouped since systolic B.P. rise with EP was not in excess of 50mm. Hg and their Mecholyl curve was similar to Group IV.
	Acute Schizophrenics – 5	1	1				3	
	Psychoneurotics – 6		5					1 could not be grouped since systolic B.P. rise with EP was not in excess of 50mm. Hg and the Mecholyl curve was similar to Group II–III.
B	*Funkenstein's Series – (2)* Schizophrenics – 37	3	13		20	1		
	Psychoneurosis – 32	3	9	10		5	5	
	Psychopathic Personality – 15	8	7					
	Involutional Psychosis – 12	1				10	1	
	Manic Depressive Manic – 4		1			1	2	
	Normal Controls – 15	1	12	1		1		The control who fell into Group VI was under psychological stress.
C	*Geocaris & Kooiker's Series (13)* Chronic Schizophrenics – 35	3	31	1				

did not recur on retesting after three weeks on chlorpromazine and superficial psychotherapy. This patient was discharged from hospital 15 weeks after admission. The acute schizophrenic falling in Group II-III was a woman with inadequate and inappropriate affect, who showed marked anxiety with both epinephrine and mecholyl. Electroconvulsive therapy caused an increase in this anxiety. This patient did well on coma insulin and returned to her home.

Of the six psychoneurotics five fell into Group II-III, and of these, four showed anxiety after epinephrine, and two after mecholyl. Although four of the six patients have left hospital, there was no marked improvement after treatment with chlorpromazine, psychotherapy, modified insulin, or insulin coma.

DISCUSSION

In our study the 16 chronic schizophrenic patients showed responses which fell into the groups considered to have an unfavourable prognosis. This finding is in agreement with that of Geocaris and Kooiker (13), and provides indirect support of the prognostic validity of the test, since in schizophrenia the recovery rate after the first few years is exceedingly low. There is difficulty in the classification of the chronic schizophrenics into Funkenstein's groups. For example, Geocaris and Kooiker (13) reported that half of their chronic schizophrenic group showed a blood pressure rise of less than 50 mm. Hg in response to epinephrine. Thus, unless their response to mecholyl readily

allowed them to be placed in Group V, classification became a matter of opinion. These investigators classified the majority of these chronic schizophrenics into Groups I or II-III since they show only one case in Group V as explained in their footnote.

In our patients a rise in systolic blood pressure of 50 mm. Hg or less after epinephrine was observed in two chronic schizophrenics and one psychoneurotic. The latter, more adequately classified as a schizoid personality with mild depression, showed no basic change after treatment. Thus, the fate of our few patients that showed a small rise in blood pressure after epinephrine confirms Funkenstein (2) and Geocaris and Kooiker (13) who conclude that a small rise is associated with a poor prognosis. Pasquarelli *et al.* (16), state that seven of their patients who showed a blood pressure response of less than 50 mm. Hg after epinephrine did not differ from others in their clinical course. These investigators used only half the dose of epinephrine recommended for the standard test and, therefore, their observations are not comparable. In our five acute schizophrenics, the response to treatment agreed with the prognosis derived from the test.

Funkenstein *et al.* (5) state that they have not encountered a patient with epinephrine-precipitated anxiety who did not become much more anxious after E.C.T. This was true of the one patient in our series that showed anxiety after epinephrine.

According to Gellhorn (20) Groups V, VI and VII show hyporeactivity of the central sympathetic system in response to mecholyl. Electric and other forms of shock therapy increase central sympathetic reactivity (2) and hence improve patients in Groups VI and VII. These therapies do not improve patients in Group V who show central sympathetic hyporeactivity, but in this group there is also evidence of other autonomic dysfunction. Gellhorn states (2), "that this very slight hypertensive effect of adrenalin on Group V suggests that the central parasympathetic reactivity is intensified in these patients. The injection of adrenalin raises the pressure in the sino-aortic area and causes an increase in the vagal tone, (in addition to a decrease in the sympathetico-adrenal discharge). The greater the excitability of the parasympathetic centres, the less must be the pressor effect of injected adrenalin if other factors are kept the same. It is not unlikely that variations in central parasympathetic centres play an important role in functional mental disorders."

CONCLUSIONS

The findings in our small series support the conclusions of Funkenstein and others that the blood pressure and subjective responses to test doses of epinephrine and mecholyl have prognostic value in the psychoneuroses and psychoses. An adequate test can be completed in two hours.

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Résumé

La réaction de la pression artérielle à l'injection intraveineuse de 0.05 mg d'épinéphrine en solution salée et à l'injection intramusculaire de 10 mg de mécholyl fut mesurée chez six névrotiques, cinq cas de schizophrénie aigüe et seize schizophrènes chroniques. Cette procédure fut répétée trois jours consécutivement suivant la technique de Funkenstein, Solomon et Greenblatt. Après avoir rassuré les patients, on leur demanda de faire connaître leurs sensations. On s'enquit de l'apparition de l'anxiété subjective tandis qu'on évalua les manifestations et les symptômes anxieux en se servant de la table évaluatrice d'anxiété de Cameron.

Le tableau I énumère les critères de six groupes pronostiques de Funkenstein, et montre comment se répartit notre série, tandis que le tableau III donne la répartition des cas d'une part de Funkenstein et d'autre part de Geocaris et Kooiker. Dans notre étude les seize schizophrènes chroniques donnèrent des

réactions qui les situaient dans les groupes à pronostic défavorable. Ce résultat est en accord avec celui de Geocaris et Kooiker et confirme les indications pronostiques du test, étant donné que dans la schizophrénie le taux de rémission après les premières années est excessivement bas. Il existe une certaine difficulté à incorporer les schizophrènes chroniques dans les groupes de Funkenstein. A l'appui de cette constatation, Geocaris et Kooiker rapportèrent que la moitié de leurs schizophrènes chroniques montrèrent sous l'effet de l'épinéphrine une élévation de la pression artérielle de moins de 50 mm Hg. Ainsi, à moins que la réaction au mécholyl n'indique leur appartenance au groupe V, le classement devient une question d'opinion. Ces investigateurs classifièrent la majorité de ces schizophrènes chroniques dans les groupes I, II et III. Un seul de leurs cas put être placé dans le groupe V comme ils l'indiquent dans une note en bas de page.

Chez nos malades, une élévation de la pression systolique de 50 mm Hg. ou moins après injection d'épinéphrine fut observée chez deux schizophrènes chroniques et un névrotique. Ce dernier cas, mieux classifié comme personnalité schizoïde avec dépression légère, ne montra aucun changement d'importance après traitement. Ainsi, l'évolution de nos quelques patients qui montrèrent une faible élévation de la pression artérielle après épinéphrine confirme les données de Funkenstein (2) et Geocaris et Kooiker qui indiquent qu'une faible élévation signifie un pronostic pauvre. Pasquarelli et al. (16) rapportèrent que sept de leurs patients qui eurent une élévation de la pression artérielle de moins de 50 mm Hg. après épinéphrine ne se comportèrent pas différemment des autres dans leur évolution clinique. Ces investigateurs n'utilisèrent que la moitié de la dose d'épinéphrine recommandée pour le test standard, de sorte que leurs observations ne sont pas comparables. Dans nos cinq cas de schizophrénie aigüe, la réponse au traitement confirma les prévisions pronostiques du test.

Funkenstein et al (5) déclarent qu'ils n'ont pas rencontré de patient ayant manifesté une anxiété produite par l'épinéphrine, qui ne devint beaucoup plus anxieux après E.C.T. Cette observation fut retrouvée chez notre patient qui montra de l'anxiété après épinéphrine.

Nos résultats sur un petit nombre de cas sont en accord avec les conclusions de Funkenstein et les autres sur la valeur pronostique des modifications de la pression artérielle et des réactions subjectives de l'individu à la suite de l'injection d'épinéphrine et de mécholyl. Ce test peut être effectué d'une façon adéquate en deux heures.

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